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## ABSTRACT

This annotated bibliography of information on nutrition and the elderly was written for nutrition professionals, health care providers, and organizations that work with older adults. The focus is primarily on nutrition in the United States. The bibliography includes 399 citations of both print and nonprint resources that are readily available to the intended audience. Most bibliographic citations are accompanied by an abstract of the material; only legislative documents are not annotated. Cross references are listed for works that have more than one subject focus. References are arranged by subjects. Sections include: (1) Overview--Nutritional Concerns and General References; (2) Nutritional Status; (3) Metabolism and Nutrient Requirements; (4) Aging and Nutritional Status; (5) Nutrition-Related Diseases; (6) Legislation, Hearings and Related Literature; (7) Food and Nutrition Programs; (8) Nutrition Information; and (9) Sources of Information. A list of 12 references, not received in time to be evaluated for inclusion in the bibliography, are provided under the heading "Recent Literature." Author and title indexes are included. (NB)

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Number 34

# Nutrition and the Elderly:

A Selected Annotated Bibliography  
for Nutrition and Health Professionals

*Compiled by:*

Evelyn Cox, Ph.D., R.D.  
Janet Sandberg, R.D.

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# **Nutrition and the Elderly:**

## **A Selected Annotated Bibliography for Nutrition and Health Professionals**

*Compiled by:*

Evelyn Cox, Ph.D., R.D.  
Janet Sandberg, R.D.

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## Preface

The nutritional and health status of the elderly population is becoming an ever increasing concern of health professionals. Two major factors have prompted this interest in the elderly: (1) a predicted increase in the number of elderly persons from 12 percent of the total population in 1980 to over 20 percent by 2030; and (2) the increase in life expectancy to over 70 years. Because a larger number of people are living longer, it is important to study the various factors that affect their quality of life.

Aging, nutrition, and health form a triad that influences the well-being of individuals throughout the life cycle. Malnutrition of the elderly population is becoming more prevalent and is an area that needs more study. Some of the factors contributing to malnutrition in the elderly include physical condition, economic status, mental health, educational level, and social isolation.

The purpose of this bibliography is to provide nutrition professionals, health care providers, and organizations involved with individuals over 60 years of age a listing of resources that would be helpful to them in their work. Items intended for those concerned primarily with research, medical therapeutics, and theoretical concepts of the aging process were not included. The focus is primarily on nutrition in the United States, although some foreign materials were selected; only English-language materials were considered.

### USING THE BIBLIOGRAPHY

The bibliography includes both print and nonprint resources that are readily available to the intended audience. Audiovisuals designed for use with the general public can be found in the section on nutrition education. Any audiovisuals aimed at the professional are listed at the end of the appropriate subject category.

Each bibliographic citation is accompanied by an abstract of the material (except for legislative citations). Cross references are listed for works which have more than one subject focus. Author and title indexes are provided.

References are arranged by subject. Literature which pertains to more than one subject area may be cross-referenced. That is, the full citation with abstract, will be cited in only one category but the author and title may be listed under other categories with a notation to see the full reference number. All citations are numbered consecutively throughout the bibliography.

All references are annotated except for legislative documents. References to audiovisuals are listed under their subject areas, although those that are primarily educational are listed under Nutrition Information Media, Audiovisuals.

At the back of the bibliography, there is an index of book and article titles. A separate index is provided for the first two authors of each item. Both indexes list the citation numbers (not the page numbers).

#### **ACKNOWLEDGMENTS**

This bibliography was undertaken as a part of FNIC's mission to disseminate nutrition information to food and nutrition professionals. A contract was awarded to the Maxima Corporation to prepare this publication.

A peer review panel was formed to provide expert guidance in this effort. Special recognition goes to Linda Chen, Ph.D., Professor in the Department of Nutrition and Food Science, University of Kentucky; Annette Natow, Ph.D, R.D., Associate Professor in the School of Nursing, Adelphi University and Editor of the Journal of Nutrition for the Elderly; and Carolyn VanMason, M.R.A., Nutritionist for the U.S. Administration on Aging.

I would also like to acknowledge the assistance of Elaine Casserly McLaughlin, M.S., R.D. and Carole J. Shore, M.S., R.D., from the National Agricultural Library; and Karen W. Newton, M.L.S. and Catherine R. Selden, M.L.S., of the Maxima Corporation, in the development of this bibliography.

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National Agricultural Library

## Recent Literature

The following items were not received in time to be evaluated for inclusion in the bibliography but they are considered pertinent to the scope. The citations are given here for the reader's convenience without any endorsement of the work.

- Albanese, Anthony A. NUTRITION FOR THE ELDERLY. New York: Liss, 1980. 332 pp.
- ASSESSING THE NUTRITIONAL STATUS OF THE ELDERLY. Columbus, OH: Ross Laboratories, 1982. 47 pp.
- Davies, Louise. THREE SCORE YEARS -- AND THEN? A STUDY OF THE NUTRITION AND WELLBEING OF ELDERLY PEOPLE AT HOME. London: Heinmann Medical Books, Ltd., 1981. 228 pp.
- Feldman, Elaine B., ed. NUTRITION IN THE MIDDLE AND LATER YEARS. Boston: John Wright-PSG, Inc., 1983. 341 pp.
- Haller, Edwin W. and Cotton, Gerald E., eds. NUTRITION IN THE YOUNG AND THE ELDERLY. Lexington, MA: Collamore, 1983. 248 pp.
- Kart, Cary S. and Metress, Seamus P. NUTRITION, THE AGED, AND SOCIETY. Englewood Cliffs, N.J.: Prentice-Hall, 1984. 212 pp.
- Kirschner Associates, Inc. ANALYSES OF FOOD SERVICE DELIVERY SYSTEMS USED IN PROVIDING NUTRITION SERVICES TO THE ELDERLY: Title III, Part C. Washington, D.C.: U.S. Department of Health and Human Services, Administration on Aging, 1981. various paging. [DHHS Publication No. (OHDS) 82-20510; G.P.O. stock number 017-062-00136-8]
- Kirschner Associates, Inc. and Opinion Research Corporation. AN EVALUATION OF THE NUTRITION SERVICES FOR THE ELDERLY. Washington, D.C.: U.S. Department of Health and Human Services, Administration on Aging, 1983. 3 vol. [DHHS Publication Nos. (AoA) 83-20915, 83-20916, 83-20917]
- McCool, Audrey C. and Posner, Barbara Millen. NUTRITION SERVICES FOR OLDER AMERICANS: FOODSERVICE SYSTEMS AND TECHNOLOGIES. Chicago: American Dietetic Association, 1982. 2 vol.
- Somogyi, J.C. and Fidanza, F., eds. NUTRITIONAL PROBLEMS OF THE ELDERLY. New York: Karger, 1983. 199 pp.
- Watkin, Donald M. HANDBOOK OF NUTRITION, HEALTH, AND AGING. Park Ridge, N.J.: Noyes Publications, 1983. 326 pp.
- Watson, Ronald R. CRC HANDBOOK OF NUTRITION IN THE AGED. Boca Raton, FL: CRC Press, 1984.

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## **I. Overview—Nutritional Concerns & General References**



- 1 ABOUT AGING: A CATALOG OF FILMS. Los Angeles, CA: University of Southern California Press, 1977. 148 pp.

More than 300 films are divided into 34 categories related to aging. Each listing includes where the film may be rented or purchased and how much it costs.

- 2 AGING AND NUTRITION. DIETARY MODIFICATIONS IN DISEASE. Columbus, OH: Ross Laboratories, 1979. 29 pp.

Health and nutrition needs of the elderly, drawn from recent and classic research, are summarized in this handbook for professionals. Physiologic changes, psychosocial aspects of aging, as well as nutritional needs for protein, fiber, water, vitamins and minerals are included. Short discussions of chronic diseases and classes of commonly used drugs are followed by implications for the health professional in institutional, ambulatory and supportive care services of the elderly.

- 3 Barrows, Charles H. and Kokkonen, Gertrude C. "RELATIONSHIP BETWEEN NUTRITION AND AGING." In Advances in Nutritional Research, vol. I, edited by Harold H. Draper. New York: Plenum Press, 1977: 253-298.

The literature on the effect of age on nutritional requirements and the effect of nutrition on life span are reviewed to provide useful information for optimal nutrition of the aged and to promote understanding of the basic mechanisms of biological aging. Serious nutritional problems among the aged are estimated at five to ten percent. Surveys show protein, calcium, vitamin C and vitamin A to be consumed at levels lower than the RDA, and low dietary intakes to be associated with poor health and low income. Decrease in calorie intake is accompanied by age-related decrease in basal metabolism and decline in physical activity.

- 4 Beal, Virginia A. "THE ADULT AND THE ELDERLY." In Nutrition in the Life Span, by Virginia A. Beal. New York: John Wiley and Sons, 1980: 381-439.

Aspects of U.S. life expectancy, the aging process, nutrition and health, psychological-biological interactions, and nutrient requirements relative to aging are reviewed and discussed. Various theories have been put forth on the causes of aging; some of the approaches used in current studies are described. Physiological changes that occur in the various body systems are considered; however, while body functions and systems are usually categorized or



classified, the changes that result from aging are interrelated and interdependent. Also, changes in height, weight, and body composition are described. A number of specific health factors are considered (e.g., atherosclerosis, hypertension, osteoporosis, alcoholism, diabetes, cancer) in relation to the adjustments which are needed to meet specific nutrient intake needs.

- 5 Caird, F.I.; Judge, T.G.; and MacLeod, Catriona. "POINTERS TO POSSIBLE MALNUTRITION IN THE ELDERLY AT HOME." Gerontologia Clinica, 17(1), 1975: 4/-54.

Nutritional, medical and social data were collected from 264 persons over 65 living at home in order to determine what factors may subject the elderly to nutritional risk. Nutrient intakes and buying/eating practices were evaluated. Total amount of money spent on food per week, consumption of seven or fewer hot meals per week and presence of a physical disability are possible clues to the existence of malnutrition. Social class standing, independent living, and presence of psychiatric diagnosis were not significant factors of nutritional risk.

- 6 Carlson, Lars A., ed., NUTRITION IN OLD AGE. Uppsala, Sweden: Almqvist & Wiksell, 1972. 180 pp.

The proceedings of a 1971 symposium on the elderly consist of 17 articles dealing with physiologic and metabolic changes which occur with aging, nutritional needs of the aged in health and disease, and nutritional surveys in old age.

- 7 Caster, W.O., ed., THE NUTRITIONAL PROBLEMS OF THE AGED. Athens, GA: The Inter-Institutional Committee on Nutrition, 1971. 52 pp.

On February 26, 1971, a meeting was held to discuss nutritional problems of aging in Georgia. The four papers delivered are given along with six short reports from the various discussion groups. Topics discussed include social, economic, cultural and health aspects, nutrition education, and an industrial approach to feeding.

- 8 Elwood, Thomas W. "NUTRITIONAL CONCERNS OF THE ELDERLY." Journal of Nutrition Education, 1(2), Apr./June 1975: 50-52.

A study of nutrition questions asked of 3,800 elderly who participated in 38 Vigor in Maturity (VIM) programs is reported. The study was developed by National Retired Teachers Association-American Association



of Retired Persons, and was conducted in 30 States. Nutritional concerns include cholesterol, sugar and artificial sweeteners, salt, effect of processing and cooking on nutrient content of foods, dietary supplements, preservatives and additives, health foods, weight control, and fraudulence. Special needs and problems of the elderly in obtaining an adequate diet are discussed. Nutritional concerns should be used to develop sound information for this age group.

- 9 FOOD & NUTRITION FOR HEALTH IN LATER YEARS. Manhattan, KA: Kansas State University Cooperative Extension Service, Mar. 1978. Bulletin No. C-593. 14 pp.

An overview of nutrition for the aging provides discussions of body changes which affect nutritional well-being and calorie needs, and a paragraph on each of four nutrition-related problems: overweight, diabetes, sodium restriction, and fat/cholesterol restriction. The basic four food groups (with notes and illustrations) are followed by discussions of some key nutrients. Questions frequently asked by senior citizens and tips for meal enjoyment are included.

- 10 FOOD FOR OLDER FOLKS. Washington, DC: U.S. Extension Service, 1974. Two 16mm filmstrip keys, 15 frames each, color, and record 33-1/3 rpm for use with General Electric Show 'n Tell phonoviewer or filmstrip/audiocassette, 32 frames, color, sound, 7 min.

Special dietary requirements, as well as shopping and cooking considerations of an elderly person living alone or with one other person are highlighted. A balanced diet including new foods, even for those on a limited income, is encouraged.

Can be obtained from Double Sixteen Company, P.O. Box 1616, Wheaton, IL 60187.

- 11 Grills, Norma J. "NUTRITIONAL NEEDS OF ELDERLY WOMEN." Clinical Obstetrics and Gynecology, 20(1), Mar. 1977: 138-143.

Women over 60 who live alone and institutionalized women over 80 are most likely to have poor eating habits because of lower income level, greater isolation, disinterest in nutrition, and physical/mental disabilities. Recommendations for the diet of a woman over 50 include (1) sufficient calories to maintain ideal body weight, and (2) lowered levels of sucrose, saturated fat and cholesterol to reduce risk of heart disease and maintain reasonable glucose tolerance. Dietary changes should be meaningful and measurable and the patient should be

involved in the planning of a diet with a minimum amount of change in eating habits and eating style.

- 12 Harper, Alfred E. "NUTRITION, AGING, AND LONGEVITY." American Journal of Clinical Nutrition, 36(4), Oct. 1982: 737-749.

The potential connection between nutrition, aging, and long life is reviewed with respect to age-associated changes, diet and survival, food restriction and implications from animal studies. While nutritional needs change with changes in physiologic state and it is known that application of nutritional knowledge can enhance longevity, there is no evidence to support the assumption that some unique diet will lengthen the currently recognized maximum life span.

Investigations of reports of small population groups (e.g., in the Himalayan mountains; in Georgia, USSR; in Ecuador) who purport to live unusually long lives have indicated some exaggeration and have shown them to be suspect. It is striking, in contrast, that life expectancy is very similar among populations that consume nutritionally adequate diets as varied as those of Norway, Sweden, Italy, France, Japan, Switzerland, Canada, and the United States. If a low death rate from all causes is the ultimate criterion, sound nutritional practices and long life expectancy can be achieved with a variety of diets that differ considerably in carbohydrate, fat, and fiber content (provided they contain adequate protein and other essential nutrients).

- 13 HELP YOURSELF TO BETTER HEALTH. Berkeley, CA: Society for Nutrition Education, 1976. 16mm motion picture, color, sound, 15 min.

The importance of good nutritional habits for senior citizens, and ways in which they can obtain a balanced diet in spite of limited budgets and physical problems are depicted. Good shopping practices, such as saving coupons, reading unit prices, and comparing labels for calorie versus protein content are shown. The use of nonfat dry milk is recommended for persons on low budgets, and those with high blood cholesterol. The necessity of eating fruits and vegetables which are high in vitamins A and C, as well as foods with minerals, such as iron, and other vitamins is stressed. Ideas for enjoying meals more by eating with others, watching television while eating, or eating outside are illustrated. Exercise is also recommended for maintaining good health.

- 14 Hsu, Jeng M. and Davis, Robert L., eds., HANDBOOK OF GERIATRIC NUTRITION: PRINCIPLES AND APPLICATIONS FOR NUTRITION AND DIET IN AGING. Park Ridge, NJ: Noyes Publications, 1981. 372 pp.

Aspects of the interassociations among nutrition, health, and aging are described for nutritionists and other health professionals. Topics range from maternal and early neonatal nutrition to nutrition of the elderly. The relationships of particular nutrients to aging and the elderly include discussions on protein, carbohydrates, vitamins (ascorbic acid, folic acid, vitamins B6, D, E), and minerals (zinc, copper, selenium chromium, magnesium, phosphorus, calcium, fluoride). Aspects of cholesterol metabolism and dietary fiber also are included, as are psychological and sociological aspects.

- 15 Keown, Gail M. and Klippstein, Ruth N. POSITIVE LIVING IN THE SENIOR YEARS. Ithaca, NY: Cornell University, 1976. Slides (74 frame base set, 21 frame supplementary set), 2x2 inches, scripts (16 pp. base, 46 pp. supplementary), and text, "Concerns of the aging: Nutrition and health-related statistical data."

The basic slide set, designed to stimulate discussion in elderly audiences, is divided into four modules, "Aging and Today's Senior Citizen," "The Body and Aging," "Food Needs of the Elderly," and "Feelings and Food." Each section may be used independently or in combination with others. Supplementary slides give demographic and health-related data for the elderly. Scripts provide background information, discussion questions, and suggested placement of supplementary slides in the program.

Can be obtained from Media Services, Office of Visual Communications, 412 Roberts Hall, Cornell University, Ithaca, NY 14853.

- 16 Kohrs, Mary Bess. "A RATIONAL DIET FOR THE ELDERLY." American Journal of Clinical Nutrition, 36(4), Oct. 1982: 796-802.

Studies of physiologic and pathologic processes and of sociologic factors related to diet acceptability by the elderly are reviewed. Included in this assessment are the relationships and influences of obesity, nutrients (total fat, saturated fat, and cholesterol; trace minerals; iron; protein; carbohydrate; fiber; and sodium), and alcoholic beverages. The elderly can benefit by selecting a nutritionally adequate diet and consuming the recommended servings of the Basic Four food groups. The minimum amounts of these servings will provide about 1,200 kcal (the lower limit of the energy range for women). To insure that all known nutrients are included, the elderly should consume a wide variety of foods in each major food group, and reduce consumption of foods (having a high concentration of alcohol, sugars, fats, oils) which provide calories and few other essential nutrients. Physical activity, which contributes to energy balance and

a sense of well being, should be a part of the elderly nutrition regime.

- 17 Leaf, Alexander. "OBSERVATIONS OF A PERIPATETIC GERONTOLOGIST." Nutrition Today, 8(5), Sept/Oct 1973: 4-12.

Observations of three populations, the Hunzakuts of Pakistan, the Vilcabambians of Ecuador and the Georgians in the Soviet Socialist Republic, reveal a larger than expected number of aged persons. Examination of lifestyle and diet show active elderly persons in two of the groups existing on lower calorie and fat levels than are currently recommended, but a more unrestricted diet of dairy products, meats and fats in the Georgians. The author's observations in light of present knowledge of diet and atherosclerosis in Western cultures are included.

- 18 Luros, Ellyn. "A RATIONAL APPROACH TO GERIATRIC NUTRITION." Dietetic Currents, 8(6), Nov./Dec. 1981: 25-28.

Elderly residents of nursing homes often remain institutionalized until they die, receiving all meals and nutritional care at the facilities. For this reason, strict therapeutic diets may be detrimental to long-term care. Since residents eat better if their diets are familiar, only dietary modifications which produce significant health benefits are recommended.

- 19 Munro, H.N. "NUTRITION AND AGING." British Medical Bulletin, 37(1), Jan. 1981: 83-88.

Selected studies exploring the significance of nutrition in aging, body composition, tissue function and metabolism are reviewed. Body composition changes result in decreases in skeletal muscle, liver, kidney and lung tissue, and bone density. The immune function of aging cells is decreased by actual loss of cells and impaired function. Decreased tissue avidity for nutrients is observed with some studies indicating little clinical or functional benefit of supplementation. A decline in the rate and efficiency of glucose, lipid and protein metabolism and the total basal metabolic rate is observed. Growth retarding feeding restrictions in animal models can delay the onset of lethal diseases and prolong their lifespan by affecting early cell programming and altering tissue function associated with aging. Recommendations of nutrient needs are extrapolated from information based on the needs of young subjects. Further studies are needed to identify dietary conditions conducive to

less atherosclerosis, cancer, chronic disease, and maintenance of optimum tissue function.

- 20 Natow, Annette B. and Heslin, Jo-Ann. "APPROPRIATE FOOD SELECTION." In Geriatric Nutrition. Boston: CBI Publishing, 1980: 245-281.

Guidance information is provided to assist the elderly in various aspects of food selection and use. Detailed consideration is given to the areas of budgeting, marketing economically for various food types, proper food storage to ensure preservation without spoilage, and the independent preparation of food for meals. The benefits of a daily food guide are discussed, emphasizing the four food groups as a pattern for the recommended daily food intakes. Sample menus and advice for cooking for one or two people are given.

- 21 Natow, Annette B. and Heslin, Jo-Ann. In GERIATRIC NUTRITION. Boston, MA: CBI Publishing Co., 1980. 332 pp.

A text for health professionals who care for geriatric patients addresses important factors in the everyday nutritional management of the elderly. Older persons are often at risk of nutritional deficiency; proper nutrition is a critical aspect of preventive medicine and health care of the aged. Diet therapy and assessment of nutritional status are especially relevant for older adults in management of chronic illness. Nutrient needs, RDA's, and food consumption in the elderly are considered following a discussion of the aging process and its effect on body systems. Other topics examined include nutrition-related health problems and nutrient-drug interactions.

- 22 "NUTRITION OF THE ELDERLY, SYMPOSIUM." Postgraduate Medicine, 63(3), Mar 1978: 117-172.

The symposium was designed to serve the specific needs of the primary care physician. Topics include influence of mind, body, and environment on nutrition; effects of aging on cholesterol metabolism; vitamin needs; and calcium nutrition.

- 23 NUTRITIONAL CARE OF ELDERLY PATIENTS. Columbus, OH: Ross Laboratories, 1976. 16mm motion picture, color, sound, 25 min, 12 pp. annotated script booklet.

Dietitians providing nutritional care for patients of extended care facilities need to consider physiological and psychological factors.

Common problems of the elderly are reviewed. Basic assessment, planning, implementation, and evaluation steps in the development of individualized nutritional care plans are outlined. Script booklet includes reference list, self-assessment quiz, and sample dietary data card. Up-to-date methods and techniques of counseling are demonstrated.

Can be obtained for free loan from local Ross Territory Managers or contact Ross Laboratories, 625 Cleveland Avenue, Columbus, OH 43216.

- 24 "PARADISE LOST." Nutrition Today, 13(3), May/June 1978: 6-9.

Information derived from later studies retutes some findings of the article, "Observations of a Peripatetic Gerontologist," (Nutrition Today, Sept./Oct. 1973). Persons in the Ecuadorian village of Vilcabamba, at first believed to be 100 years and older, were found to have exaggerated their ages. If closer examination of other populations is done, results are expected to reveal that the percentage of elderly and the length of life are similar to that of Western countries.

- 25 Parham, Ellen S. "NUTRITION EDUCATION FOR THE ELDERLY." Journal of Home Economics, 72(1), Spring 1980: 24-26.

Nutrition problems and needs of the elderly are discussed. A planned, systematic exposure to nutrition education stressing motivation for good food habits and management of interfering limitations is recommended. Planners are encouraged to be realistic about expectations of such a program.

- 26 "POSITION PAPER ON NUTRITION AND AGING." Journal of the American Dietetic Association, 79(4), Oct. 1981: 463.

Nutritional needs of older persons are influenced by the economic, social, physiological, and psychological factors accompanying aging. The American Dietetic Association is committed to improving the nutritional status of the elderly. Action must be supported in nutrition education, nutrition research, and nutritional care.

- 27 Posner, Barbara Millen. NUTRITION AND THE ELDERLY. Lexington, MA: Lexington Books, 1979. 183 pp.



An overview is given of problems affecting nutritional status of the elderly, results of nutrition surveys, statistics regarding the aging population, and nutrient requirements for the aged. A major part of the book deals with the history, goals, and methods of operation of nutrition programs instituted under the Older Americans Act. Evaluation research and results are described, and implications for future programming and research needs are identified.

- 28 Rao, D.B. "PROBLEMS OF NUTRITION IN THE AGED." Nutrition and Food Science, 3, 1980: 757-767.

Some of the socioeconomic and dietary aspects of the aged relative to nutritional status and health are examined. Factors which may lead to dietary inadequacy or imbalance in the elderly include limited income, loneliness, reduced activity, social isolation, chronic invalidism, poor teeth, depression, and confusion. A cycle depicting the interrelation of health, economics, social conditions, and disease in the elderly is discussed. Socioeconomic and physiopathologic factors compound nonoptimum food habits in the elderly. To assist the aged in maintaining their health, nutrition education must be related to their special needs (e.g., qualifications of an ideal food). The principles of sound nutritional practices, diet planning factors, and the basic five food groups are discussed.

- 29 Rao, Dodda B. "PROBLEMS OF NUTRITION IN THE AGED." Journal of the American Geriatrics Society, 21(8), Aug 1973: 362-367.

Several physiological, socioeconomic and psychological factors of aging are presented which contribute to inadequate nutrition and diseases of the aged. Recommendations for the diet of the elderly include reduced caloric intake to maintain optimum weight, increased protein intake (1.5-2.0 gram/kilogram or 20-25 percent of total calories), reduced fat intake (20 percent of total calories), emphasis on good sources of iron, calcium and ascorbic acid, and adequate fluid and roughage intake. Ideas to consider in meal planning for the elderly are offered.

- 30 Reichel, William, ed., CLINICAL ASPECTS OF AGING. Baltimore: Williams & Wilkins Co., 1978. 528 pp.

Forty-nine chapters, written by experts in geriatric care, deal with the management of clinical problems commonly encountered in geriatric practice as well as a broad range of other considerations affecting the physical and mental well-being of the elderly. Chapter 17, "Recognition and Management of the Nutrition Problems of the Elderly,"

includes assessment of nutritional status, and causes and effects of inadequate or excessive intakes of food with dietary regimens to correct these conditions. Nutritional implications in disease are given in the chapters treating each condition.

- 31 Rivlin, Richard S. "NUTRITION AND AGING." American Journal of Medicine, 71(3), Sept 1981: 337-340.

Physiological factors which may alter the nutritional adequacy of the diets of the elderly and research findings which may alter dietary recommendations for the elderly are discussed. Sensory deprivation, through impairment of vision, reduced hearing, loss of taste acuity and smell sensations may affect food selection and intake. Bone loss from osteoporosis and tooth loss from periodontal disease (perhaps an early manifestation of osteoporosis) reflects the need for consideration of the recommendations for calcium, fluoride, and protein intake in relation to the high phosphate American diet. Defining the appropriate dietary intake also must consider animal studies indicating that calorie restriction may prolong the life span and delay the emergence of diseases of aging.

- 32 Rockstein, Morris and Sussman, Marvin L., eds. NUTRITION, LONGEVITY, AND AGING. New York: Academic Press Inc., 1976. 284 pp.

This collection of papers from a symposium held February 26 and 27, 1976, at the University of Miami School of Medicine is authored by clinicians and research scientists working in nutrition and gerontology. Included is an overview of the nutritional characteristics of the elderly, role of nutrition in human aging, protein metabolism and needs of the elderly, possible role of vitamins in the aging process, and degenerative diseases in the elderly. There is an extensive bibliography with each chapter.

- 33 Rowe, Dorothy. "AGING--A JEWEL IN THE MOSAIC OF LIFE." Journal of the American Dietetic Association, 72(5), May 1978: 478-486.

Theories of aging, biologic changes of aging, programs and services for the elderly, attitudes about aging, money management for the aged, and the dietitian's role in gerontology are discussed. The dietitian should become familiar with the increasing opportunities for providing nutrition service to the elderly, thus adding to the quality of life for the older person.

- 34 Schaefer, Arnold E. "NUTRITION POLICIES FOR THE ELDERLY." American Journal of Clinical Nutrition, 36(4), Oct. 1982: 819-822.

There are currently over 24 million people in the United States over age 65; by the year 2030 over 20 percent of the U.S. population may be over 65. In the future elderly people will be better educated and more accustomed to entitlement services. While special dietary guidelines may not be necessary, programs that inform the elderly about nutrition health issues and aid them in obtaining a nutritionally adequate diet are needed. Nutritional services should be part of the services provided by health care facilities for the elderly, and should include nutritional status assessment as part of a physical examination. Other areas for consideration include food technology (smaller package sizes, ease of opening food containers, development of nutrient-dense foods), assurance of elderly nutrition (feeding) programs, and establishment of dietary needs and patterns through reexamination of data obtained in HANES, Ten-State Survey, and other surveys and studies. Continuation and expansion of the Title VII program for the elderly, and modification of HHS-USDA dietary guidelines for the elderly are two of the public policy issues identified.

- 35 Schuster, Karolyn. "THE POLITICS OF FEEDING THE ELDERLY." Food Management, 18(3), Mar. 1983: 46-51, 74-75, and 77-78.

The cost of feeding programs for the elderly, the reasons for the shortfall in funding, and where the funding will come from are issues discussed. The cost of Federal programs for the elderly was \$210 billion in fiscal year 1983 (about 28 percent of total Federal expenditures), with Social Security accounting for over half of this. The elderly represented 11.6 percent of the population in 1982; this number will increase to 21.7 percent by 2050. Further, the poverty rate for the elderly exceeds that of the general population, especially for those living alone and elderly black women. One major reason for the shortfall in funding has been the tagging of Social Security benefits to inflation rate. Various proposals for raising needed funding include raising social security taxes, postponing cost-of-living benefits, and making some benefits subject to income tax. The problem of feeding the elderly is not one that will be easily solved.

- 36 Shock, Nathan W. "THE ROLE OF NUTRITION IN AGING." Journal of the American College of Nutrition, 1, Nov. 1982: 3-9.

Caloric requirements diminish with age while nutrient requirements do not; nutritional deficiencies often are found among the poor and

disadvantaged elderly. The elderly are more susceptible because their dietary regimens are limited in variety; often the same foods are eaten day after day, thus increasing the likelihood of deficiencies in minerals, vitamins, and protein. Animal studies have demonstrated that a decrease in food intake can prolong life, but this has yet to be confirmed in humans. Nutrition and gerontology share common aspects and lack of data, but more research is needed to confirm any relationship between them.

- 37 Simopoulos, Artemis. "THE ROLE OF THE FEDERAL GOVERNMENT IN RESEARCH ON NUTRITION AND AGING." Journal of the American College of Nutrition, 1, Nov 1982: 11-15.

The Government (specifically the National Institutes of Health, NIH) supports most of the research on the biomedical and behavioral aspects of nutrition through grants and contracts; in addition, NIH has established a new national program in the Clinical Nutrition Research Unit. Furthermore, USDA sponsors research on aging at Tufts University Human Research Center on Aging; the center studies the effects of nutrition on the aging process and the effects of aging on nutritional needs. Nutrition research and training is coordinated at the Federal level by the Joint Subcommittee for Human Nutrition Research (JSHNR), working out of the Administration's Executive Office. The JSHNR attempts to increase efficiency of federally funded nutrition research.

- 38 Skalen, Pearl. "INADEQUATE NUTRITION IN THE ELDERLY: A STUMBLING BLOCK TO GOOD HEALTH." Family and Community Health, 3(4), Feb 1981: 61-66.

Obstacles to adequate nutrient intake by the elderly and how to overcome them are reviewed. These obstacles include: physical barriers (ability to chew and digest foods, reduced capabilities of smell and taste, obesity, irregular bowel movements, inadequate fluid intake); problems in obtaining food (food costs, limited cooking facilities, limited mobility, established eating habits, food misconceptions); and emotional barriers (reluctance to therapeutic diets, eating alone). Solutions to these problems include the evaluation of nutritional status of each elderly individual and the provision of nutrition education. Specific measures concerning cancer, urinary infections, and the resolution of food consumption problems are discussed. It is important that the health professional dealing with an elderly subject does not attribute nutrition problems and conditions simply to old age.

- 39 Sorenson, A.W. "DIET AND HEALTH FOR SENIOR CITIZENS: WORKSHOPS BY THE HEALTH TEAM." Gerontologist, 21(3), Jun 1981: 257-262.

Nutritional background information, educational guidelines, and program design used in the development of a 1-day workshop for rural senior citizens are described. Lectures, demonstrations, group activities, and individual consultation were employed by a team of health care specialists to help participants understand the relationship of obesity to chronic disease, evaluate their current eating patterns, identify individual dietary goals, and to present methods for implementing the dietary modifications. Followup evaluation indicated that 70 percent of participants had altered dietary patterns to meet personal objectives and would desire additional workshops.

- 40 SPICE OF LIFE. Washington, DC: National Dairy Council, 1983. 16mm motion picture, color, sound, 14 3/4 min.

A film designed for use by community health educators with mature audiences uses a story line in which a sister, visiting her recently widowed brother, helps him improve his outlook on meal planning and healthful eating. They shop, taking advantage of seasonal foods, generic brands, unit pricing, and coupons; and discuss nutritional needs, with the emphasis on reducing total calories while maintaining adequate nutrient intake (especially calcium and fiber). At home, they discuss proper storage of perishables and other purchased foods, and preparation of small meals. A discussion guide provides suggestions for introducing the film and questions for followup discussion.

- 41 "SYMPOSIUM ON EVIDENCE RELATING SELECTED VITAMINS AND MINERALS TO HEALTH AND DISEASE IN THE ELDERLY POPULATION OF THE UNITED STATES." American Journal of Clinical Nutrition, 36 (5 Suppl), Nov 1982: entire issue.

The symposium deals with the role of nutrition in the maintenance of health and effective functioning throughout life. The issue being discussed is the evidence relating certain specific nutrients (calcium, vitamin D, iron, zinc, folate, thiamin) to health issues of importance to the elderly. (Papers are listed under specific topics.)

- 42 "SYMPOSIUM ON NUTRITION AND THE AGING." American Journal of Clinical Nutrition, 36(4 Suppl), Oct 1982: entire issue.



The topic of nutrition and aging covers a wide spectrum of sciences including anatomy, biochemistry, biology, physiology, medicine, sociology, and psychology. It includes basic as well as applied nutrition. The symposium was developed to provide clinicians and practitioners in the health sciences with some basic concepts related to nutrition and aging and to give some practical suggestions based on recent research findings. (Papers are listed under specific topics).

- 43 Temprow, Wendy Alicia. "NUTRITIONAL PROBLEMS IN THE AGED: DIETARY ASPECTS." Journal of the National Medical Association, 70(4), Apr 1978: 281-283.

Factors contributing to malnutrition in the aged are reviewed-- physical condition, economic status, social aspects, and mental health. Nutritional problems may result from impaired intake or uptake. Intervention programs are mentioned; more are needed. The team approach to continuing care of patients following discharge from Peter Bent Brigham Hospital in Boston is described.

- 44 Todhunter, Neige E. "NUTRITION OF THE ELDERLY." In Human Nutrition: Nutrition and the Adult: Micronutrients, edited by Rosalyn B. Altin-Slater and David Kritchevsky. New York: Plenum Press, 1980: 39/-41/.

Nutritional aspects of the elderly are reviewed including biochemical and biophysical changes associated with aging, the potential influence of nutrition on longevity, nutrient requirements, assessing nutritional status, and food attitude and practices of the elderly. Special attention is given to nutrient requirements, covering the specific adult recommended daily allowances, importance, and research studies on elder nutrient needs for energy, protein and amino acids, minerals (calcium, phosphorus, iron, iodine, magnesium, zinc, etc.), fluid intake, and dietary fiber. Dietary studies, clinical measures, sex influences, and nutrition-related diseases also are discussed.

- 45 TOWARD A NATIONAL POLICY ON AGING. FINAL REPORT. Vol. II. Washington, DC: U.S. Government Printing Office, 1973: 43-4/.

The brief history of nutrition in the White House Conference on Aging, 1961, and the characteristics of the 1971 nutrition delegation are presented. The preamble states the attitudes of the delegation: adequate nutrition is basic to the rights of older Americans; food has social as well as physical significance, (several alternatives are suggested to meet those needs); educational measures should supplement all nutrition programs; and special attention should be given to



providing nutritional services to rural, isolated, and minority group elderly. Recommendations presented above are explained briefly.

- 46 Watkin, Donald M. "AGING, NUTRITION, AND THE CONTINUUM OF HEALTH CARE." In Food and Nutrition in Health and Disease, edited by N. Henry Moss and Jean Mayer. New York: New York Academy of Sciences, 1977: 290-297.

Aging, nutrition, and health form an inseparable triad which must be planned and implemented together to improve the quality of life for all from conception to death. Four major issues concerning how societies can be convinced of the need, value, and cost effectiveness of this triad are discussed.

- 47 Watkin, Donald M. "LOGICAL BASES FOR ACTION IN NUTRITION AND AGING." Journal of the American Geriatrics Society, 26(5), May 1978: 193-200.

The first base (nutrition, health, and aging form an inseparable triad) has been applied to the Nutrition Program for Older Americans. The second (malnutrition is secondary to disease and disability, whether physical, emotional or attitudinal) means underlying disorders must be treated if nutritional status is to benefit from dietary improvement. The third (the nutrition-health-aging triad influences well-being throughout life) means good nutrition and health practices are needed all through life. The fourth (health-promoting changes in lifestyle improve longevity at any point in life) requires professional and political leadership for wide adoption. The fifth (acute illness and accidents in the elderly require prompt and vigorous attention) requires education of health professionals and lay persons.

- 48 Watkin, Donald M. "NUTRITION FOR THE AGING AND THE AGED." In Modern Nutrition in Health and Disease, edited by Robert S. Goodhart and Maurice E. Shils. Philadelphia: Lea & Febiger, 1980: 781-813.

Aspects of gerontology involving nutrition are discussed and substantiated with an extensive bibliography. From discussion of the aging process on the cellular level (primarily animal studies), the chapter proceeds to consideration of specific nutrients. Their role in and effects on the aging process and diseases of aging are discussed.

- 49 Watkin, Donald M. "NUTRITION, HEALTH AND AGING." In Nutrition and the World Food Problem, edited by Miloslav Rechcigl, Jr. Basel, Switzerland: Thur AG Offsetdruck, Pratteln, 1979: 20-61.

This extensive chapter reviews work on all of the major nutrients including trace elements. The clinical application section discusses recommended allowances, secondary malnutrition, drug-hormone-nutrient relations, and education. The bibliography includes 237 citations.

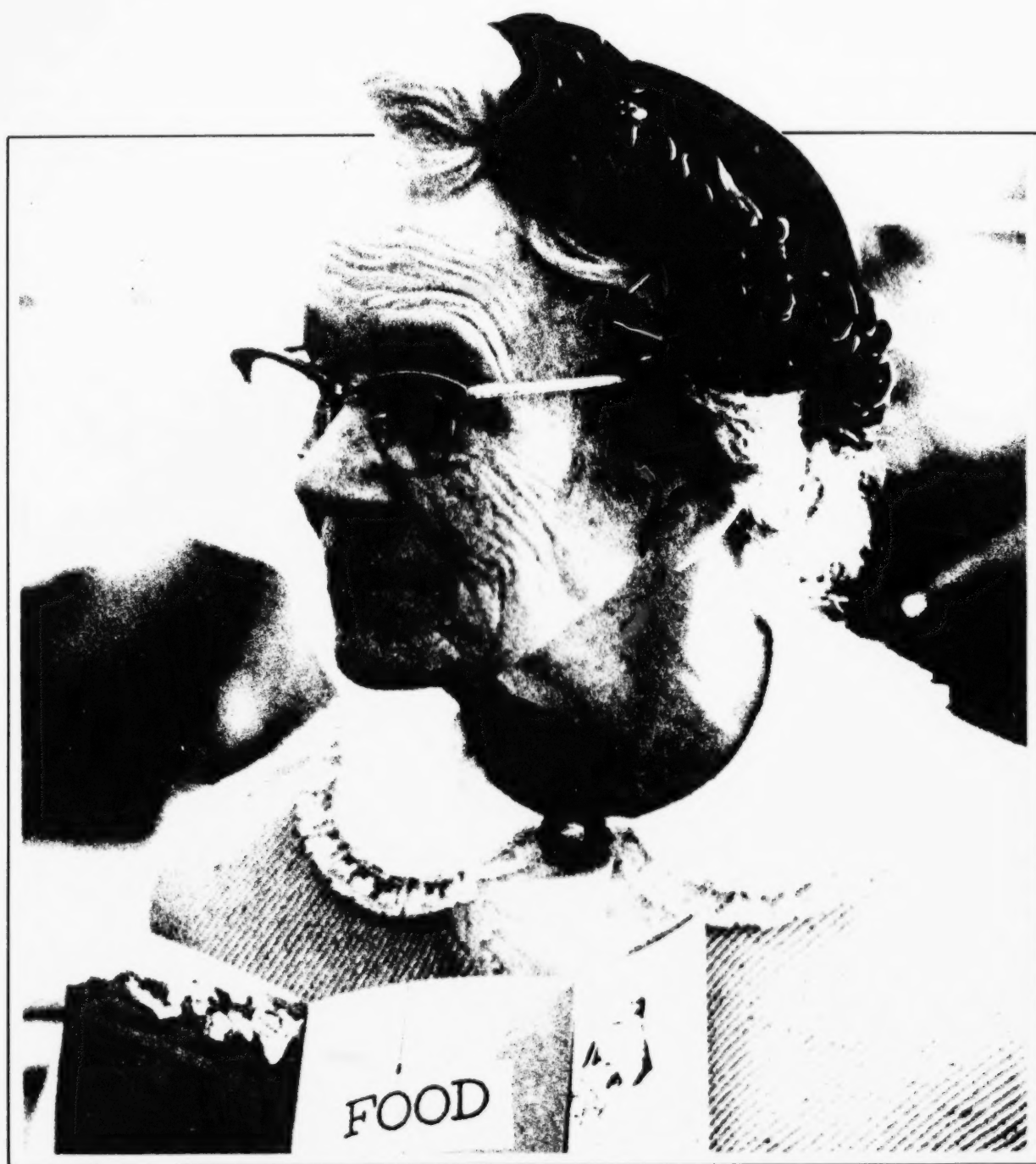
- 50 Weg, Ruth B. NUTRITION AND THE LATER YEARS. Los Angeles: University of Southern California Press, 1978. 222 pp.

A broad overview of aging and nutrition and their relation to health, disease, and longevity is given. The appendix includes an exhaustive bibliography, glossary, seven-day menu (evaluated for each nutrient) with guidelines and meal patterns for older persons, and lists of food sources of nutrients.

- 51 Weg, Ruth B. "OLD AGE: CHANGING DIETARY NEEDS." The Professional Nutritionist, 11 (Winter), 1979: 1-5.

Health and longevity depend on individual genetics, exposure to public health concerns (pollution, radiation), and factors within personal control (tobacco, exercise, nutrition). The consequences of dietary deficiencies suffered by the aged are explored; adequate diet may be even more important in old age than in youth. Increased incidence of cancer, atherosclerosis, and other diseases is linked with today's American diet of fatty animal proteins and highly processed foods. Older persons should be viewed individually when nutritional evaluation and dietary recommendations are made.

## II. Nutritional Status



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## GENERAL

- 52 Barboriak, J.J.; Rooney, C.B.; Leitschuh, T.W.; and Anderson, A.J. "ALCOHOL AND NUTRIENT INTAKE OF ELDERLY MEN." Journal of the American Dietetic Association, 72(5), May 1978: 493-495.

A comparison of the food intake and nutritional status of 25 imbibers and 26 abstainers (average age 60 years) at the Veterans Administration Domiciliary in Milwaukee showed that regular consumption of alcohol reduced intake of calories, protein, fat, carbohydrate, linoleic acid, vitamin A, and riboflavin. This occurred even though ample food was available. Plasma triglyceride, cholesterol, and serum albumin levels were slightly lower in the imbibers.

- 53 Bowman, Barbara B.; Rosenberg, S.M.; and Rosenberg, Irwin H. "ASSESSMENT OF THE NUTRITIONAL STATUS OF THE ELDERLY." American Journal of Clinical Nutrition, 35(5), May 1982: 1142-1151.

A review of selected dietary, anthropometric, clinical, and biochemical studies considers the complexity and methodological limitations of assessing the nutritional status of the elderly. Dietary studies reveal that most elderly have energy intakes below the RDA standard with decreased intakes of calcium, iron, vitamin A, and water soluble vitamins. Limitations of these studies include use of 24-hour recall and lack of consideration of alcohol and nutritional supplements in calculating intakes. Clinical signs of malnutrition often reported in the elderly (e.g., hair and skin changes, muscle wasting, and confusion) are often considered to be "normal" changes of aging. Biochemical indices most often identify folacin and B complex deficiencies but differ for other nutrient deficiencies among ethnic groups studied. Results are complicated by decreased renal and immune functions of the elderly, reliance on data obtained from institutionalized elderly, and nutrient-drug interactions.

- 54 Caliendo, Mary Alice. "DIETARY STATUS OF PARTICIPANTS IN THE NATIONAL NUTRITION PROGRAM FOR THE ELDERLY, PART I. POPULATION CHARACTERISTICS AND NUTRITIONAL INTAKES."

See Reference No. 311.

- 55 CALORIC AND SELECTED NUTRIENT VALUES FOR PERSONS 1-74 YEARS OF AGE: FIRST HEALTH AND NUTRITION EXAMINATION SURVEY. UNITED STATES, 1971-1974.

Washington, DC: U.S. Government Printing Office, 1979. DHEW Publication No. (PHS) 79-1657. 88 pp.

Preliminary findings of the HANES study of 10,126 noninstitutionalized persons, ages 1 through 74 showed that mean intakes of all nutrients, except vitamins A and C, declined with age. Diets of persons over 60 years old were most frequently inadequate in calories, protein, calcium, and iron (with a higher frequency of inadequacy in women than in men) but were adequate in vitamins A and C, thiamin, and riboflavin. Data include age, sex, race, and income level.

- 56    Exton-Smith, A.N. "NUTRITIONAL DEFICIENCIES IN THE ELDERLY." In Nutritional Deficiencies in Modern Society, edited by Alan N. Howard and I. McLean Baird. London: Newman Books, 1973: 82-97.

Findings of cross-sectional and longitudinal studies are reviewed. Primary factors responsible for the types of malnutrition often seen in the elderly are ignorance, social isolation, physical and mental disabilities, poverty, and iatrogenic conditions such as inappropriate diets. Secondary causes are listed also. Prevalence of deficiencies of vitamins C and D and studies concerning them are presented. Early recognition of nutritional deficiencies, group meals or feeding programs, nutrition education and supplementation of the diet are all suggested as means to improve the nutrition of the elderly.

- 57    Flint, D.M. and Prinsley, D.M. "VITAMIN STATUS OF THE ELDERLY." In Vitamins in Human Biology and Medicine. Boca Raton, FL: CRC Press, 1981: 65-79.

A review covers the clinical aspects and status of vitamins D, C, B12, folacin, thiamin, and niacin in the elderly. It was concluded that the elderly are vulnerable to deficiencies of vitamins C, D, B12, and folacin, and, to a lesser extent, thiamin. Vitamin requirements of the elderly are becoming of greater concern to health professionals due to the rapid increase in this population. The advisability of recommending vitamin supplementation to elderly groups at risk is not established. Care must be exercised when interpreting clinical findings of low vitamin levels. Clinical manifestations of overt vitamin deficiency are rare, but subclinical vitamin deficiencies in the elderly do occur.

- 58    Grandjean, Ann C.; Korth, Linda L.; Kara, Gail C.; Smith, Jack; and Schaefer, Arnold E. "NUTRITIONAL STATUS OF ELDERLY PARTICIPANTS IN A CONGREGATE MEALS PROGRAM." Journal of the American Dietetic Association, 78(4), Apr 1981: 324-329.

Thirty volunteers, aged 58-83, from a congregate meals program for the elderly participated in a program to evaluate nutritional status. Anthropometric measurements, dietary recall, use of nutritional supplements, and biochemical analysis of fasting blood samples provided the information. A nutrient analysis computer program reported amounts and percentages of RDA's for vitamins, minerals, fat, carbohydrate, protein, and kilocalories. The diets consumed provided at least 70 percent of RDA's in 93 percent of the cases; the remaining 7 percent were rated poor, but none supplied less than 54 percent of dietary needs. Supplements were used by 27 percent. The incidence of obesity was unusually high, 42 percent of the women and 78 percent of the men being over 119 percent of ideal body weight.

- 59 Kohrs, M.R.: O'Neal, R.: Preston, A.: Eklund, D.; and Abrahams, O.  
 "NUTRITIONAL STATUS OF ELDERLY RESIDENTS IN MISSOURI." American Journal of Clinical Nutrition, 32(12), Dec 1978: 2186-2197.

Results of the 1973 Missouri Nutrition Survey of white persons over 59 years of age indicate that poor dental health, obesity, and anemia are the major nutrition-related problems. More than half are edentulous, limiting the variety of the diet. Although average calorie intakes are below 100 percent of the Recommended Dietary Allowances, 20 percent of the males and over 50 percent of the females are obese. Twenty percent of the males and 11 percent of the females have low levels of hemoglobin. Fifty percent of the women and 20 percent of the men consume diets with one or more nutrients below two-thirds of the 1974 RDA. Calcium and thiamin intakes are especially low for females.

- 60 Kohrs, Mary Bess; Nordstrom, James, et al. "ASSOCIATION OF PARTICIPATION IN A NUTRITIONAL PROGRAM FOR THE ELDERLY WITH NUTRITIONAL STATUS."

See Reference No. 318.

- 61 Lowenstein, F.W. "MAJOR NUTRITIONAL FINDINGS FROM THE FIRST HEALTH AND NUTRITION EXAMINATION SURVEY IN THE UNITED STATES OF AMERICA, 1971-1974." Bibliotheca Nutrio et Dieta, 30, 1981: 1-16.

Data are presented based on the findings of a major survey (HANES I) of a sample of 28,043 persons aged 1-74 years selected to be examined between 1971 and 1974. Some major findings from the four major parts of the nutritional component of HANES I are given and discussed separately. These four parts included dietary intake based on 24-hour recall and a food frequency questionnaire, laboratory tests for levels



and distributions in blood and urine of biochemical and hematological variables related to nutrition, clinical signs of possible deficiencies or excesses, and anthropometric measurements. Iron was the most frequent deficiency. Mean hemoglobin values of blacks were lower than those of whites, despite higher iron intakes in many black females. High intakes were noted for total fat, saturated fat, and cholesterol.

- 62 Mitchell, C.O. "DETECTION OF PROTEIN-CALORIE MALNUTRITION IN THE ELDERLY." American Journal of Clinical Nutrition, 35(2), Feb 1982: 398-406.

The geriatric population is an ever-increasing segment of our society. A careful review of the physical, anatomic, and biochemical changes which occur with aging indicates that measurements traditionally made to detect the presence of protein-calorie malnutrition may be inappropriate for the elderly, due to a lack of specific norms for comparison. Changes that are normally seen with age may appear to be representative of a nutrition deficit, if the observer is unfamiliar with the aging process. Methods of extrapolating existing nutritional assessment data for use in the geriatric population, development of norms specific for the aged, and study of nontraditional methods of evaluation should all be considered in an effort to improve nutritional assessment techniques for this population.

- 63 Natow, Annette and Heslin, Jo-Ann. "ARE THE AGED WELL NOURISHED?" In Geriatric Nutrition. Boston: CBI Publishing Co., 1980: 26-49

Recommended Dietary Allowances (RDA) and food consumption surveys for the elderly are discussed in line with a broad treatment of approaches to nutritional assessment of the aged. The latest revision of the RDA (1980) provides recommended intakes for 12 nutrients for people over age 51, and energy intakes for people 51-75 and over 75. Consideration must be given to these allowances when reviewing nutritional studies on the elderly. The results of three major food consumption surveys (including HANES) and of other surveys are described. Nutritional assessment of the elderly should consider medical and dietary history, anthropometric measurements, physical signs of nutrient deficiency, and a biochemical clinical (blood and urine analysis) assessment. Each of these areas of nutritional assessment are separately discussed. Format questionnaires for nutritional assessment and for assessing nutritional intervention needs are included.

- 64 O'Hanlon, Pauline and Kohrs, Mary B. "DIETARY STUDIES OF OLDER AMERICANS." American Journal of Clinical Nutrition, 31(7), July 1978: 1257-1269.

This summary of 28 studies includes location, sex, age and number of subjects; type of housing, dietary methodology; number of nutrients analyzed; purpose; standards and criteria; and nutrients falling below standards. Comparison is difficult because of the differences in methodologies and standards used, and differences in sex and age of subjects. Energy and calcium intakes are most frequently found to be below standards; protein and niacin are most often found to be sufficient.

- 65 Shaver, Harry J. "NUTRITIONAL STATUS OF NURSING HOME PATIENTS." Journal of Parenteral and Enteral Nutrition, 4(4), July/Aug 1980: 367-370.

Nutritional assessment of 115 nursing home patients, 48-101 years of age, was made by use of anthropometric, biochemical, hematological and immunological techniques to evaluate patients' nutritional status. Weight/height, triceps skinfold, arm and arm muscle circumference, serum albumin and transferrin, total lymphocyte count, hemoglobin and hematocrit were measured; an intradermal skin test analyzed patients' cell-mediated immunity (CMI). Findings indicated a high prevalence (85 percent of patients) of protein-calorie malnutrition of moderate to severe degree according to currently accepted nutritional assessment standards.

#### DIETARY ASSESSMENT— FREE-LIVING INDIVIDUALS

- 66 Caliendo, Mary Alice. "PRELIMINARY OBSERVATIONS ON THE DIETARY STATUS OF PARTICIPANTS IN THE TITLE III-C MEAL PROGRAM." Journal of Nutrition for the Elderly, 1(3,4), Fall/Winter 1981: 21-39.

Food intakes, nutrition knowledge, and selected demographic and personal information were collected from a group of 169 participants in the National Nutrition Program for the elderly in a Maryland county. Mean intakes of most nutrients were high relative to the RDA's, but ranges of nutrients consumed showed a considerable variation among the group. Intakes of calcium and thiamin by females, were lower than those of males. Scores on a nutrition knowledge test were generally low, indicating a need for improved nutrition education efforts in the meal program. Other factors related to dietary status and nutrition knowledge are reviewed and discussed.

- 67 Clarke, Mary and Wakefield, Lucille. "FOOD CHOICES OF INSTITUTIONALIZED VS. INDEPENDENT-LIVING ELDERLY." Journal of the American Dietetic Association, 66(6), June 1975: 600-604.

Amounts and frequency of food intake for 22 food groups were determined for 99 nursing home and 98 independent-living elderly. Less than half of both groups had nutrient intakes meeting two-thirds of the 1968 RDA for eight nutrients. Nursing home residents had more diet changes, and change correlated negatively with nutritional score.

- 68 Greger, Janet L. and Sciscoe, Brenda S. "ZINC NUTRITURE OF ELDERLY PARTICIPANTS IN AN URBAN FEEDING PROGRAM." Journal of the American Dietetic Association, 70(1), Jan 1977: 37-41.

Forty-four persons (mean age 69 years) at six Indianapolis project sites of title VII congregate feeding programs were evaluated for dietary intake, zinc, and nutritional status. Mean intakes for nine nutrients met the Recommended Dietary Allowances, but the mean intake for zinc was only 66 percent of the allowance. There was no correlation between dietary zinc and such parameters of zinc nutritional status as hair zinc concentration and taste acuity.

- 69 Harrill, Inez and Cervone, Nancy. "VITAMIN STATUS OF OLDER WOMEN." American Journal of Clinical Nutrition, 30(3), Mar 1977: 431-440.

Caloric and vitamin intakes and biochemical measures of vitamin status were similar for two groups of women, 62 to 99 years of age - 46 nursing home residents and 24 women living at home. Mean intakes for calories and thiamin were 75 percent of the Recommended Dietary Allowances. Mean intakes of vitamin A, riboflavin and ascorbic acid exceeded the RDA, but percent of subjects receiving less than two-thirds of the RDA was 21 percent for vitamin A, 13 percent for ascorbic acid and 9 percent for riboflavin.

- 70 Iber, Frank L.; Blass, John P.; Brin, Myron; and Leevy, Carroll M. "THIAMIN IN THE ELDERLY--RELATION TO ALCOHOLISM AND TO NEUROLOGICAL DEGENERATIVE DISEASE." American Journal of Clinical Nutrition, 36(5), Nov 1982: 1067-1082.

Status of thiamin in the elderly North American population is reviewed. Most Americans eat sufficient thiamin but about five percent of those over 60 years old show impaired thiamin status. This is more marked in the poor, those confined in institutions, or those with illness. Thiamin responsive heart disease and Wernicke Korsakoff CNS syndromes occur in the elderly but there is no increase in

prevalence. Minor heart or neurological syndromes related to thiamin deficiency cannot be identified. The Recommended Dietary Allowance of thiamin provides at least 50 percent excess thiamin for those over 60 years old. This amount is adequate. There is no known toxicity for thiamin.

- 71 Reichel, William, ed. CLINICAL ASPECTS OF AGING.

See Reference No. 30.

- 72 Rosenberg, Irwin; Rowman, Barbara R.; Halsted, Charles H.; and Lindenbaum, John. "FOLATE NUTRITION IN THE ELDERLY." American Journal of Clinical Nutrition, 36(5), Nov 1982: 1060-1066.

Data primarily concerned with the assessment of folate status in the North American elderly are reviewed and evaluated. The mean dietary folate intake in free-living elderly is, in general, probably adequate. In addition to the need for additional reliable data, safe and reasonable dietary goals for folate intake are required. Hospitalized or institutionalized elderly having diseases are at greater risk than elderly who are not. Further, indications are that the poor elderly in the United States may be at a greater risk for folate deficiency. Evidence for folate deficiency based on blood analysis appears to focus on the lower socioeconomic elderly (mostly blacks and Hispanics) as inpatients. Alcohol represents the most important risk factor in folate deficiency among the elderly and nonelderly alike. While certain drugs (e.g., anticonvulsants and sulfasalazine) may interfere with folate absorption or utilization, the number of elderly taking such drugs is relatively small. Folate requirements for the elderly do not appear to be different than for younger adults, but further study is needed. Folate deficiency does not seem to contribute to anemia in the elderly.

- 73 Somerville, Peter J.; Lien, John W.K.; and Kave, Michael. "THE CALCIUM AND VITAMIN D STATUS IN AN ELDERLY FEMALE POPULATION AND THEIR RESPONSE TO ADMINISTERED SUPPLEMENTAL VITAMIN D-3." Journal of Gerontology, 32(6), Nov 1977: 659-663.

The dietary intakes of calcium and vitamin D, as well as calcium absorption and serum 25-hydroxycholecalciferol (25-OHD), in a group of 18 ambulatory women aged 72 to 94 are compared to the intakes of a control group of three males and three females aged 24 to 48. Intakes of calcium and vitamin D are similar in both groups. Calcium absorption is normal in both groups and serum 25-OHD levels are comparable. The findings suggest the importance of complete

assessment of the dietary and metabolic status of the elderly and, unless dietary or serum vitamin D levels are low, supplementation with vitamin D should not be given.

## RURAL POPULATIONS

- 74 Brown, P.T.; Bergan, J.G.; Parsons, E.P.; and Krol, I. "DIETARY STATUS OF ELDERLY PEOPLE. RURAL, INDEPENDENT-LIVING MEN AND WOMEN VS. NURSING HOME RESIDENTS." Journal of the American Dietetic Association, 71(1), July 1977: 41-45.

A comparison is made between nutrient analyses of 10-day dietary records from 23 independent-living elderly men and women and 7-day weighed food intakes from 20 residents of a private nursing home in the same Northeastern rural community. The independent elderly have higher intakes for all nutrients except calcium and riboflavin. The greatest problem for the institutionalized elderly is caloric deficit; a potential problem for the independent-living women is low calcium intake.

- 75 Caliendo, Mary Alice. "DIETARY STATUS OF PARTICIPANTS IN THE NATIONAL NUTRITION PROGRAM FOR THE ELDERLY: PART I. POPULATION CHARACTERISTICS AND NUTRITIONAL INTAKES."

See Reference No. 311.

- 76 Clarke, Robert P. "NUTRIENT INTAKE, ADIPOSITY, PLASMA TOTAL CHOLESTEROL, AND BLOOD PRESSURE OF RURAL PARTICIPANTS IN THE (VERMONT) NUTRITION PROGRAM FOR OLDER AMERICANS (TITLE III)." American Journal of Clinical Nutrition, 34(9), Sept 1981: 1743-1751.

The prevalence of obesity, hypertension, and high plasma cholesterol was examined in relation to nutrient intake among 91 elderly participants in a Vermont congregate meal program. Mean nutrient intakes of men were significantly higher than those of women; conversely, mean plasma cholesterol levels were lower. No sex differences were noted with respect to age, blood pressure, or indicators of obesity. Total fat and animal protein intakes were higher in men than in women. In females, systolic blood pressure increased with age but body mass index decreased. A greater percentage of women exhibited plasma cholesterol concentrations at high-risk levels (greater than 260 mg/100 ml); proportionately more females than males over 73 years of age had blood pressure at or above risk level. A higher proportion of women than men also had elevated

plasma cholesterol levels and adiposity. Moreover, females demonstrated a higher combined incidence of two or more risk factors. No men in any age group were observed in the three-risk category; 9 percent of the females were in this group.

- 77 Guthrie, Helen A.; Black, Kathleen; and Madden, J. Patrick. "NUTRITIONAL PRACTICES OF ELDERLY CITIZENS IN RURAL PENNSYLVANIA." Gerontologist, 12(4), Winter 1972: 330-335.

The diets of 55 elderly persons eligible for food assistance were compared to the diets of 54 not eligible for food assistance by use of 24-hour recalls. The low-income group had a higher percentage of diets meeting less than two-thirds of the Recommended Dietary Allowances for all nutrients, especially protein, iron and riboflavin. Those participating in the Food Stamp Program had better diets for all nutrients than those eligible but not participating in the program. Compared with low-income families of all ages, the elderly had less adequate diets.

- 78 Rawson, I.G.; Weinberg, E.I.; Harold, J.A.; and Holtz, J. "NUTRITION OF RURAL ELDERLY IN SOUTHWESTERN PENNSYLVANIA." Gerontologist, 18(1), Feb 1978: 24-29.

This study focused on nutritional deficiencies and the implications for regional planning of an area agency on aging. Dietary interviews conducted with 28 respondents from a larger survey of health status and services utilization showed deficiencies of calories, calcium, and vitamin A. Other problems identified were income below poverty level for 75 percent and lack of transportation to shop for food. Identification of regional inadequacies has led to more effective program planning. Nutrition program menus and nutrition education have been adjusted to correct the dietary deficiencies.

#### URBAN POPULATIONS

- 79 Harrill, Inez. "NUTRITIONAL STATUS STUDIES IN THE WESTERN REGION: SELECTED ETHNIC AND ELDERLY GROUPS."

See Reference No. 136.

- 80 Harrill, Inez; Erbes, Cynthia, et al. "OBSERVATIONS ON FOOD ACCEPTANCE BY ELDERLY WOMEN."

See Reference No. 92.



- 81 Hunter, Kathleen I. and Linn, Margaret W. "CULTURAL AND SEX DIFFERENCES IN DIETARY PATTERNS OF THE URBAN ELDERLY." Journal of the American Geriatrics Society, 27(8), Aug 1979: 359-363.

One hundred and eighty-two subjects over 65 years (91 females, 91 males, 94 blacks, 88 whites) were interviewed concerning background, health, and dietary habits. Results showed sex and race differences in meal patterns and quality of diet (rated on quantity and quality of portions consumed from the four major food groups), with males and blacks having lower ratings. Poorer diets were correlated with low socioeconomic status, less education, smoking, and disability.

- 82 Kohrs, Mary B.; O'Hanlon, Pauline, et al. "TITLE VII-NUTRITION PROGRAM FOR THE ELDERLY. I. CONTRIBUTION TO ONE DAY'S DIETARY INTAKE."

See Reference No. 321.

- 83 Lowenstein, Frank. "NUTRITIONAL STATUS OF THE ELDERLY IN THE UNITED STATES OF AMERICA, 1971-1974." Journal of the American College of Nutrition, Nov 1982: 165-177.

The National Health and Nutrition Examination Survey (HANES I) sampled 3,479 persons 65-74 years of age. The major findings related to nutritional status were based upon (1) a 24-hour recall examining dietary intake and frequency, (2) biochemical and hematological tests, (3) clinical signs associated with deficiencies of nine nutrients, and (4) anthropometric measurements. The findings were based upon sex, racial group (black and white), and income group (below and above poverty). Caloric intakes of the elderly were low and most nutrient intakes were adequate, except for calcium and iron in women. Mean serum values of protein, albumin, magnesium, and cholesterol were adequate as were hemoglobin levels, serum iron, percentage transferrin saturations, and serum folate levels. Clinical signs of nutritional deficiencies were seen for vitamins C, D, thiamin, and niacin. Height and weight changes were noted, and obesity was more prevalent in women. Subgroup variations were reported for each finding.

- 84 MacLeod, Catriona C.; Judge, T.G.; and Caird, F.I. "NUTRITION OF THE ELDERLY AT HOME. I. INTAKES OF ENERGY, PROTEIN, CARBOHYDRATES AND FAT." Age and Ageing, 3(3), Aug 1974: 158-166.

A 7-day record of intake of independent-living persons over 65 showed average daily calorie intakes to be 2300 kcal for men and 1750 kcal for women. Protein provided 14-15 percent of caloric value, the majority from animal products. Mean carbohydrate and fat intakes were 265 grams and 107 grams, respectively, for women. Sucrose intake accounted for a smaller percentage of the carbohydrate intake for women than for men. Diagnosis of malnutrition was estimated to be present in 2 percent of the subjects. Findings were compared to results of the Panel on Nutrition of the Elderly (1972).

- 85 Singleton, Nan. "DIETARY INTAKES AND CHARACTERISTICS OF TWO GROUPS OF ELDERLY FEMALES." Journal of Nutrition for the Elderly, 1(1), Spring 1980: 77-89.

Based on detailed 24-hour diet recalls, the dietary intakes of 97 noninstitutionalized elderly females were assessed to determine whether those consuming congregate noon meals had a higher intake of nutrients than their institutionalized counterparts.

- 86 Yearick, Elisabeth S.; Wang, Mei-Shan; and Pias, Susan J. "NUTRITIONAL STATUS OF THE ELDERLY: DIETARY AND BIOCHEMICAL FINDINGS." Journal of Gerontology, 35(5), Sept 1980: 663-671.

Nutrient intake studies and biochemical measurements were used to determine the nutritional status of 100 non-institutionalized elderly persons (75 women and 25 men, mean age 74 years). Although values for hematocrit, hemoglobin, serum iron, ascorbic acid, plasma vitamin A, and carotene were within acceptable ranges for 90 percent of the subjects, only hemoglobin and serum ascorbic acid were significantly correlated with dietary iron and dietary ascorbic acid, respectively. Nutrients most likely to be deficient were calcium, vitamin A, and thiamin; 41 percent had low serum protein concentrations. A subsample of 4 men and 16 women living in a retirement complex providing one major meal per day consumed less protein, iron, thiamine, ascorbic acid, and niacin; but more calcium, vitamin A, and riboflavin than the private home group.

#### INSTITUTIONAL POPULATIONS

- 87 Brown, P.T.; Bergan, J.G., et al., "DIETARY STATUS OF ELDERLY PEOPLE. RURAL, INDEPENDENT-LIVING MEN AND WOMEN VS. NURSING HOME RESIDENTS."

See Reference No. 74.

- 88 Clarke, Mary and Wakefield, Lucille. "FOOD CHOICES OF INSTITUTIONALIZED VS. INDEPENDENT-LIVING ELDERLY."

See Reference No. 67.

- 89 Ford, Margaret G. and Neville, Janice N. "NUTRITIVE INTAKE OF NURSING HOME PATIENTS SERVED THREE OR FIVE MEALS A DAY." Journal of the American Dietetic Association, 61(3), Sept 1972: 292-296.

Pursuant to the American Dietetic Association Position Paper on Nutrition and Aging (1970), which recommends that the food service of long term care facilities be continually surveyed and assessed for adequacy, the study evaluates the menus and food intakes in relation to nutritional status of the elderly in two nursing homes. Findings indicate that the nutritive needs of the elderly for calories, protein, fat, thiamin, iron, vitamin A, and ascorbic acid can be provided and are generally met with either a three or five meal plan.

- 90 Greger, Janet L. "DIETARY INTAKE AND NUTRITIONAL STATUS IN REGARD TO ZINC OF INSTITUTIONALIZED AGED." Journal of Gerontology, 32(5), Sept 1977: 549-553.

Dietary intake and zinc nutritional status were assessed in 65 institutionalized subjects, mean age 75 years. Intake of all nutrients, except zinc and magnesium, exceeded Recommended Dietary Allowances; zinc intake was below two-thirds of the RDA. Five percent of the subjects had very depressed taste acuity for salt and sucrose. The lowest hair zinc levels were observed in women taking medication for coronary heart disease. Hair levels of zinc were not correlated with taste acuity, nor was either measure of zinc status correlated with zinc intake.

- 91 Harrill, Inez and Cervone, Nancy. "VITAMIN STATUS OF OLDER WOMEN."

See Reference No. 69.

- 92 Harrill, Inez; Erbes, Cynthia; and Schwartz, Cheryl. "OBSERVATIONS ON FOOD ACCEPTANCE BY ELDERLY WOMEN." Gerontologist, 16(4), July/Aug 1976: 349-355.

This study of the nutritive intake of 60 aged women, independent or living in nursing homes, indicates many have diets meeting

two-thirds of the Recommended Dietary Allowances. Intakes of calcium, however, are inadequate in 53 percent, but are not statistically related to any discernible physical, social, or psychological factors. The authors conclude that dietary intakes reflect long-standing food preferences and patterns and that appropriate nutritional care of the elderly is possible if familiar, nutritionally adequate diets are provided.

- 93 Parvizi, Simindokht. "A DIETARY STUDY OF ELDERLY NURSING HOME RESIDENTS IN FARGO, NORTH DAKOTA." Journal of Nutrition for the Elderly, 2(2), Winter 1982: 15-30.

A study was undertaken to determine whether food served and consumed over a 7-day period by 21 elderly women residents of a local nursing home met the 1980 Recommended Dietary Allowances (RDA). Comparison also was made of the nutritive values of the food served and consumed by 11 subjects on regular and 10 subjects on low salt diets. Subjects ranged in age from 74-97 years (mean age, 90). Nutrients calculated included calories, protein, fat, carbohydrates, fiber, calcium, phosphorus, iron, sodium, potassium, vitamin A, thiamin, riboflavin, niacin, and ascorbic acid. Results showed that the mean nutritive values of food served to and consumed by the 21 residents as a group exceeded the RDA, except for calcium (which was 90 and 79 percent of the RDA on the regular and low salt diets, respectively). Individually (based on the weekly means of the nutritive values) all subjects consumed 70 percent or more of the RDA for calories, protein, phosphorus, iron, vitamin A, riboflavin, and ascorbic acid; and 60 percent or more of the RDA for thiamin and niacin. Only one-third of the subjects consumed more calcium than the RDA. No statistically significant differences were found between the means of the nutritive values of the regular diet as compared with the low salt diet. Daily mood ratings of the subjects indicated a direct effect on appetite and calorie intake in the majority of subjects.

- 94 Rosenberg, Irwin; Bowman, Barbara B., et al., "FOLATE NUTRITION IN THE ELDERLY."

See Reference No. 72.

- 95 Stiedemann, Mary; Jansen, Coerene; and Harrill, Inez. "NUTRITIONAL STATUS OF ELDERLY MEN AND WOMEN." Journal of the American Dietetic Association, 73(2), Aug 1978: 132-139.

Dietary intakes and biochemical measurements of nutritional status were compared for 23 pairs of men and women, ages 62 to 98 years, in

nursing homes in Colorado. Men had significantly higher intakes of energy and all nutrients except vitamins A and C. The nutrients found to be most inadequate in all diets were thiamin and calories; women's diets were also low in calcium. Blood levels were low for serum protein and hemoglobin, particularly in men. Cholesterol and triglyceride levels were higher in women, and cholesterol was lower in the older subjects.

- 96 Vir, Sheila C. and Love, A.H.G. "VITAMIN B-6 STATUS OF THE HOSPITALIZED AGED."

See Reference No. 123.

#### CLINICAL ASSESSMENT

- 97 Clarke, Robert P. "NUTRIENT INTAKE, ADIPOSITY, PLASMA TOTAL CHOLESTEROL, AND BLOOD PRESSURE OF RURAL PARTICIPANTS IN THE (VERMONT) NUTRITION PROGRAM FOR OLDER AMERICANS."

See Reference No. 76.

- 98 Lynch, Sean R. "IRON STATUS OF ELDERLY AMERICANS." American Journal of Clinical Nutrition, 36(5), Nov 1982: 1032-1045.

Studies of iron nutriture in the elderly are limited and very few include observations on individuals over the age of 75. The two Health and Nutrition Examination Surveys carried out by the U.S. Department of Health, Education and Welfare demonstrate that the mean iron intake of Americans is adequate until the age of 75. However, with changes in the major food sources, there is a decrease in iron derived from meat and a concomitant rise in the proportion supplied by breakfast cereal. Alterations in dietary iron bioavailability that may result from this have not been studied. Physiological data suggest that the elderly do not represent a target population for iron deficiency since iron requirements are no greater than those of adult men and are lower than those of children and menstruating women. Furthermore, there is little direct evidence of a high prevalence of iron deficiency in the elderly, but the laboratory measurements that have proved useful in defining iron status in younger people have not been standardized for older people or extensively used. Anemia is still the most important known consequence of significant iron deficiency. However, the application of hemoglobin (Hb) or hematocrit standards used for younger people to the elderly, as well as the

assumption that anemia can be equated with iron deficiency, invalidates the conclusions of many surveys. Hb and hematocrit measurements are not suitable screening tests for iron deficiency in the elderly, and there is an urgent need for a clearer understanding of the physiological and nutritional factors responsible for lower Hb values in older people, particularly older blacks.

#### ANTHROPOMETRIC MEASUREMENT

- 99 Harrill, Inez. "NUTRITIONAL STATUS STUDIES IN THE WESTERN REGION: SELECTED ETHNIC AND ELDERLY GROUPS."

See Reference No. 136.

- 100 Koh, E.T. "SELECTED ANTHROPOMETRIC MEASUREMENTS FOR A LOW-INCOME BLACK POPULATION IN MISSISSIPPI." Journal of the American Dietetic Association, 79(5), Nov 1981: 555-561.

Anthropometric measurements of height, weight, triceps and subscapular skinfolds, blood pressure, and pulse were taken for a low-income black population comprised of 400 people ranging in age from 2-80 years. All measurements were affected by age and sex, generally increasing with age. Blood pressures and skinfold thickness were greater in female subjects and in the old than in male subjects or in the young. Male subjects were always taller than female subjects at a comparable age. Women weighed more than men in the 30-60 age group. This study shows that genetic and endocrine mechanisms may override environmental factors for selected anthropometric data.

- 101 Vir, Sheila C. "ANTHROPOMETRIC MEASUREMENTS IN THE ELDERLY." Gerontology, 26(1), 1980: 1-8.

Mean values and frequency distribution of anthropometric measurements (weight, skinfold thickness at triceps, subscapula and dorsum of the hand, circumference of the upper arm and abdomen) of 126 institutionalized and noninstitutionalized participants over 65 years of age are reported. While most parameters showed no significant relationship to energy intake in the majority of the groups, abdominal circumference was significantly correlated with body weight in males and females of all groups.



## BIOCHEMICAL ASSESSMENT

- 102 Baker, Herman; Frank, Oscar; Thind, I.S.; Jaslow, Seymour P.; and Louria, D.B. "VITAMIN PROFILES IN ELDERLY PERSONS LIVING AT HOME OR IN NURSING HOMES, VERSUS PROFILE IN HEALTHY YOUNG SUBJECTS." Journal of the American Geriatrics Society, 27(10), Oct 1979: 444-450.

Circulating levels of vitamins in 473 elderly persons, the majority in nursing homes, are compared to 204 volunteers (20 to 50 years of age). Results reveal deficits of thiamin, ascorbate, vitamin B-6, nicotinate, folate, and vitamin B-12 in a large proportion of the aged. Consequences of low vitamin levels, interactions of vitamins, and response of the elderly to supplemental vitamin therapy are discussed in detail.

- 103 Bailey, L.B.; Wagner, P.A.; Christakis, G.J.; Araujo, P.E.; Appledorf, H.; Davis, C.G.; Dorsey, E.; and Dinning, J.S. "VITAMIN B-12 STATUS OF ELDERLY PERSONS FROM URBAN LOW-INCOME HOUSEHOLDS." Journal of the American Geriatrics Society, 28(6), June 1980: 276-278.

The first major effort to evaluate the vitamin B-12 status of a noninstitutionalized elderly group in the United States involved a survey of 111 subjects. Findings indicated vitamin B-12 nutriture was normal and suggested that depressed serum B-12 levels are not necessarily a consequence of aging.

- 104 Bailey, L.B.; Wagner, P.A.; Christakis, G.J.; Araujo, P.E.; Appledorf, H.; Davis, C.G.; Masteryanni, J.; and Dinning, J.S. "FOLACIN AND IRON STATUS AND HEMATOLOGICAL FINDINGS IN BLACK ELDERLY PERSONS FROM URBAN LOW-INCOME HOUSEHOLDS." American Journal of Clinical Nutrition, 32(11), Nov 1979: 2346-2353.

The first report of a series describing socioeconomic and nutritional status of an aged, predominantly black population in Miami reveals widespread deficiency of folacin, with a 14 percent incidence of anemia and 32 percent incidence of leukopenia, but with no evidence of iron deficiency.

- 105 Barnes, K.J. "VITAMIN E STATUS OF THE ELDERLY IN CENTRAL KENTUCKY." Journal of Nutrition for the Elderly, 1(3,4), Fall/Winter 1981: 41-49.

A survey of 106 adult volunteers (60-90 years of age) was conducted to determine their vitamin E status, and to investigate possible relationships between plasma vitamin E level, the participants' ages, and their plasma cholesterol level. The mean SD of vitamin E levels was 1.90 mg/100 ml. When the participants' vitamin E levels were

compared by age groups (60-70, 71-80, 81-90), sex, and by whether they were institutionalized or not, no significant difference was found. There was a significant positive correlation between the measured plasma vitamin E and cholesterol levels. Significant negative correlations were found when the plasma vitamin E level or cholesterol level was compared against age. There was no vitamin E deficiency observed in the elderly populations studied.

- 106 Flint, Delia M.; Wahlqvist, M.L.; Smith, T.J.; and Parish, A.E. "ZINC AND PROTEIN STATUS IN THE ELDERLY." Journal of Human Nutrition, 35(4), Aug 1981: 287-295.

Assessment of zinc and protein status in 24 noninstitutionalized and 66 institutionalized elderly Australians, 60-99 years of age, indicated a significant correlation between serum albumin concentration and both protein and zinc intakes. Nutrient intake data were determined either by dietary history or 3-day weighed food intake methods. Plasma zinc was not associated with zinc or protein intake; protein intake was low in proportionately more institutionalized elderly than community elderly. Zinc intakes in both groups were below the RDA. Plasma zinc levels were not observed to decline with age. Plasma zinc was not as useful an indicator of zinc nutriture in this population as was serum albumin.

- 107 Garry, Philip J. "NUTRITIONAL STATUS IN A HEALTHY ELDERLY POPULATION: RIBOFLAVIN." American Journal of Clinical Nutrition, 36(5), Nov 1982: 902-909.

Riboflavin status in 270 free-living and healthy elderly was determined from dietary intake (3-day food records) and erythrocyte glutathione reductase activity coefficients (EGR-AC). High EGR-ACs (higher than 1.35) indicate poor riboflavin nutriture. Mean dietary intakes of riboflavin were 1.86 for males and 1.58 mg/day for females. Approximately 45 percent of the population were taking some supplemental riboflavin, and total riboflavin intakes ranged from 0.65 to 165 mg/day. The mean EGR-AC for those taking supplemental riboflavin was significantly lower than that of the group not taking supplements. Only three subjects had EGR-ACs greater than 1.35. A significant correlation was found between total riboflavin intake and EGR-AC. In a separate population of 667 volunteers between the ages of 20 and 87 years, a significant decrease in mean EGR-AC with age was found. The mean EGR-AC for those over 60 years and not taking a supplement was 1.16 compared to 1.23 for those from 20 to 29 years old. Inadequate riboflavin nutriture appears to be more of a problem for younger than older adults.

- 108 Gershoff, Stanley N; Brusis, O. A.; Nino, H. V.; and Huber, A. M.  
"STUDIES OF THE ELDERLY IN BOSTON. I. THE EFFECTS OF IRON  
FORTIFICATION ON MODERATELY ANEMIC PEOPLE." American Journal of  
Clinical Nutrition, 30(2), Feb 1977: 226-234.

It has been reported that large numbers of elderly Americans are moderately anemic because of iron deficiency. Information has been obtained concerning iron fortification in 221 noninstitutionalized people over 60 years of age, living in the Boston area. Two-thirds of them received iron-fortified grain products daily for 6 to 8 months. The rest received the same foods without added iron. No measurable effects attributable to the iron fortification were observed. Examination of the data obtained suggests that the cause of moderately low hemoglobin levels initially observed was not occult bleeding or tolic acid or iron deficiency.

- 109 Greenblatt, D.J. "REDUCED SERUM ALBUMIN CONCENTRATION IN THE ELDERLY: A REPORT FROM THE BOSTON COLLABORATIVE DRUG SURVEILLANCE PROGRAM." Journal of the American Geriatrics Society, 27(1), Jan 1979: 20-22.

An assessment of the relationship of age to serum albumin concentration in over 11,000 hospitalized medical patients aged 40 to 80 indicates a reduction in albumin concentration apparently associated with the aging process. Mean serum albumin concentrations fall significantly with advancing age but are more evident with each decade after 60. This decrease may affect the intensity and duration of pharmacologic actions of drugs which bind to the serum albumin.

- 110 Greger, Janet L. "DIETARY INTAKE AND NUTRITIONAL STATUS IN REGARD TO ZINC OF INSTITUTIONALIZED AGED."

See Reference No. 90.

- 111 Greger, Janet L. and Sciscoe, Brenda S. "ZINC NUTRITURE OF ELDERLY PARTICIPANTS IN AN URBAN FEEDING PROGRAM."

See Reference No. 68.

- 112 Harrill, Inez and Cervone, Nancy. "VITAMIN STATUS OF OLDER WOMEN."

See Reference No. 69.

- 113 Harrill, Inez and Kylen, Anne. "PROTEIN INTAKE AND SERUM PROTEIN IN ELDERLY WOMEN." Nutrition Reports International, 21(5), May 1980: 717-720.

Energy and protein intake was associated with serum protein concentration in 119 women, aged 62-99 years. Although total serum protein and albumin levels decreased with each decade of age by a factor of 0.1 g/dl and 0.04 g/dl, respectively, factors other than age may influence protein status in the elderly. The protein/energy ratio weakly correlated with both serum protein and serum albumin, also suggesting that factors other than dietary intakes affect the need for and utilization of protein. These may include socioeconomic influences or the presence of disease. Biochemical indicators of nutritional status in elderly persons appear to vary greatly.

- 114 Iber, Frank L. "THIAMIN IN THE ELDERLY--RELATION TO ALCOHOLISM AND TO NEUROLOGICAL DEGENERATIVE DISEASE."

See Reference No. 70.

- 115 Jansen, Coerene and Harrill, Inez. "INTAKES AND SERUM LEVELS OF PROTEIN AND IRON FOR 70 ELDERLY WOMEN." American Journal of Clinical Nutrition, 30, 1977: 1414-1422.

Calculated protein and iron intakes, serum protein levels, and measurements of iron nutriture for elderly women were related to age, income, education, and type of residence. Low or deficient levels of total serum protein and albumin were observed for 36 and 20 percent of the subjects, and low hemoglobin and elevated total iron-binding capacity values were recorded for 19 and 40 percent of the subjects. Values below the acceptable standards for albumin and hemoglobin and above the acceptable range for total iron-binding capacity were greater for nursing home patients than for private home residents. Nutrition intervention appears to be a crucial part of correction of the deficient biochemical measurements which may result from malnutrition and/or pathological conditions.

- 116 Nordstrom, James W. "ANEMIA AMONG NON-INSTITUTIONALIZED WHITE ELDERLY."

See Reference No. 279.

- 117 Omdahl, John. "NUTRITIONAL STATUS IN A HEALTHY ELDERLY POPULATION: VITAMIN D." American Journal of Clinical Nutrition, 36(6), Dec 1982: 1225-1233.

The vitamin D status in a group of healthy free-living elderly people was determined by measuring dietary and supplemental vitamin D intakes and the plasma concentration of 25-hydroxyvitamin D (25-OHD). Median dietary intake was 88 IU for vitamin D, with 26 percent of the population taking a median supplement of 400 IU. Plasma 25-OHD was significantly lower in the elderly (15.5 ng/ml) compared to a younger control (29.1 ng/ml) population. Within the elderly population, the plasma 25-OHD demonstrated a seasonal influence (nadir in January, zenith in September) and was consistently higher for men compared to women. People taking vitamin D supplements had higher plasma 25-OHD concentrations regardless of seasonal influence. Plasma alkaline phosphatase, an index for bone loss, was inversely related to the plasma 25-OHD concentration. Inadequate dietary vitamin D intake and inadequate sunlight exposure appeared to be contributory to the observed low vitamin D status. It is suggested that American elderly consider using a combination of moderate vitamin D supplementation and increased sunlight exposure in order to improve their vitamin D nutriture.

- 118 Sandstead, Harold H.; Henriksen, Louise K.; Greger, Janet L.; Prasad, Ananda S.; and Good, Robert A. "ZINC NUTRITURE IN THE ELDERLY IN RELATION TO TASTE ACUITY, IMMUNE RESPONSE, AND WOUND HEALING." American Journal Clinical Nutrition, 36(5), Nov 1982: 1046-1059.

A comprehensive review is presented concerning the role of zinc (Zn) in taste acuity, immunity, and wound recovery in the elderly. Specific attention is given to Zn in foods, Zn bioavailability, evidence of Zn deficiency, and the need for Zn in immune function. It was concluded that the mean daily Zn intake in groups of elderly Americans ranged from 7-13 mg. Dietary Zn intake appears to be related to energy intake. An apparently adequate Zn intake can be achieved for \$1.50-2.00/day with careful food selection; hence, people spending below \$1.50/day for food have limited ability to satisfy dietary Zn requirements. Further, Zn bioavailability should be considered in the food selection process. Evidence suggests that some elderly individuals have a deficient Zn nutriture, but available data are insufficient to ascertain the frequency of this deficiency. Most instances of hypogesia in the elderly, however, are unrelated to Zn nutriture. Deficient Zn nutriture seems to contribute to poor healing in the elderly, but again, the data are too few to ascertain frequency. Self-treatment with Zn greater than the RDA may be unwise.

- 119 Stiedemann, Mary and Harrill, Inez. "RELATION OF IMMUNOCOMPETENCE TO SELECTED NUTRIENTS IN ELDERLY WOMEN." Nutrition Reports International, 21(6), June 1980: 931-945.

Thirty-six elderly women in Colorado who recieved influenza vaccine were evaluated for protein, vitamin A, and zinc status in relation to serum immunoglobulin response. The results were not clearly indicative, although posttiters were related to protein and zinc status.

- 120 Stiedemann, Mary; Jansen, Coerene, et al., "NUTRITIONAL STATUS OF ELDERLY MEN AND WOMEN."

See Reference No. 95.

- 121 Srinivasan, Venkataraman. "PANTOTHENIC ACID NUTRITIONAL STATUS IN THE ELDERLY-INSTITUTIONALIZED AND NON-INSTITUTIONALIZED." American Journal of Clinical Nutrition, 34(9), Sept 1981: 1736-1742.

The pantothenic acid status of 26 institutionalized and 65 noninstitutionalized elderly men and women was assessed by radioimmunoassay and microbiological assay of blood and urine samples. Food consumption records for a 1-week period were used to determine dietary intakes. Free pantothenic acid, but not its phosphoderivatives, was found in urine samples. Pantothenic acid excretion levels were comparable in institutionalized and noninstitutionalized subjects, with mean levels of 7.5 and 5.9 mg/g creatinine. Those consuming pantothenic acid supplements had significantly higher excretion levels. Blood pantothenic acid values were comparable. The average dietary intake of pantothenic acid for the elderly population studied was 5.9 mg/day with the institutionalized and noninstitutionalized subjects having a similar intake of 2.9 mg/1000 kcal.

- 122 Vavrik, M.; Priddle, W.W.; and Liu, S.F. "SERUM CHOLESTEROL CONCENTRATION AND ATHEROSCLEROTIC CARDIOVASCULAR DISEASE IN THE AGED." Journal of the American Geriatrics Society, 22(2), Feb 1974: 56-61.

A cross-sectional study of over 500 residents of a home for the aged reveals: (1) the mean serum cholesterol level is 250 milligrams/100 milliliters for those over 60, but declines with age, (2) the type of diet has little influence on serum cholesterol, (3) females with controlled diabetes have higher serum cholesterol than other women, although this is not found in men, and (4) a higher prevalence of serum cholesterol over 250 milligrams/100 milliliters in



cardiovascular disease patients. Low levels of cholesterol do not exclude severe atherosclerosis in the elderly. However, a low level of cholesterol is one factor associated with absence of coronary heart disease. The diagnostic and prognostic value of serum cholesterol levels is thus limited.

- 123 Vir, Sheila C. and Love, A.H.G. "VITAMIN B-6 STATUS OF THE HOSPITALIZED AGED." American Journal of Clinical Nutrition, 31(8), Aug 1978: 1383-1391.

Two groups of men and women were investigated, 55 subjects receiving multivitamins, 47 without supplementation. Vitamin B-6 and protein intakes were determined from three days of weighed diets. Intakes of B-6 were rather low for both groups, and biochemical evidence of deficiency was high but not accompanied by clinical symptoms of B-6 deficiency. Large individual variations in B-6 requirement were shown. A higher RDA for B-6 was considered desirable for the elderly.

- 124 Vir, Sheila C. and Love, A.H.G. "VITAMIN D STATUS OF ELDERLY AT HOME AND INSTITUTIONALISED IN HOSPITAL." International Journal of Vitamin and Nutrition Research, 48(2), 1978: 123-130.

Vitamin D status was evaluated for 43 hospital patients and 37 subjects living at home. Serum analyses showed subclinical vitamin D deficiency in over 40 percent, but osteomalacia was diagnosed in only 5.2 percent. The status of the institutionalized group was poorer than the noninstitutionalized group, perhaps because of the lessened exposure to sunlight for the former. Dietary intake of vitamin D was low in the majority, but was not correlated with serum vitamin D levels. Bone density was not related to vitamin D intake or serum levels.

- 125 Vobecky, Josef; Hontela, Slavoj; Shapcott, Dennis; and Vobecky, Jita S. "HAIR AND URINE CHROMIUM CONTENT IN 30 HOSPITALIZED FEMALE PSYCHOGERIATRIC AND MENTALLY HEALTHY CONTROLS." Nutrition Reports International, 22(1), July 1980: 49-55.

Differences in hair and urinary chromium levels were observed between a group of 30 hospitalized female psychogeriatric patients and a group of control women without any psychiatric disorder. Psychiatric diagnoses in test subjects included senile dementia, schizophrenia, affective disorder, etc. Mean age of psychogeriatric patients was 77.5 years and control subjects was 79.9 years. Hair chromium content of controls was two-fold that of patients; in contrast, lower chromium

levels were seen in urine of controls. Hair chromium content of patients over 80 years old was lower than in younger subjects, but this pattern was not seen in controls.

- 126 Wagner, P.A. "COMPARISON OF ZINC AND FOLACIN STATUS IN ELDERLY WOMEN FROM DIFFERING SOCIOECONOMIC BACKGROUNDS." Nutrition Research, 1(6), 1981: 565-569.

Recent evidence suggests that zinc (Zn) and folacin deficiencies among the elderly may be more common than previously suspected. Folacin and Zn status of 132 elderly women (ages 55-87) of differing socioeconomic backgrounds was assessed through measurements of Zn in hair and folacin in erythrocytes. Levels of both indices were significantly higher in women of middle and upper socioeconomic status.

- 127 Wagner, P.A. "ZINC STATUS OF ELDERLY BLACK AMERICANS FROM URBAN LOW-INCOME HOUSEHOLDS." American Journal of Clinical Nutrition, 33(8), Aug 1980: 1771-1777.

The zinc content of hair and serum was measured in 135 elderly blacks, 60-87 years old, from urban low-income households, in order to assess zinc nutriture in this population. Mean hair zinc concentration was 142 micrograms/g and mean serum concentration was 93 micrograms/dl. However 39 percent of subjects had much lower concentrations and 11 percent had very depressed concentrations. These data suggest that low zinc levels in the elderly may be a normal physiological consequence of aging or may represent inadequate zinc intake.

- 128 Yearick, Elisabeth S.; Wang, Mei-Shan, et al., "NUTRITIONAL STATUS OF THE ELDERLY: DIETARY AND BIOCHEMICAL FINDINGS."

See Reference No. 86.

#### OTHER CLINICAL ASSESSMENT METHODS

- 129 Gambert, Steven R. and Guansing, Alejandro R. "PROTEIN-CALORIE MALNUTRITION IN THE ELDERLY."

See Reference No. 257.

- 130 Lee, C.J. "SOME CLINICAL INDICES OF NUTRITION AND HEALTH STATUS AMONG ELDERLY KENTUCKY RESIDENTS VOLUNTEERING TO BE SURVEYED: COMPARISON

BY SOCIOLOGICAL FACTORS, LIFE STYLES AND HEALTH CHARACTERISTICS." Nutrition Research, 1(1), 1981: 47-62.

Nutrition related health problems of 148 central Kentucky residents were studied in relation to socioeconomic factors, life style, and health conditions. Mean values for systolic blood pressure, serum total protein, and bone density of blacks were greater than those for whites. With advancing age, mean levels of hematocrit, hemoglobin, and bone density dropped significantly. The incidence of obesity was positively correlated with family living and higher income levels. Persons with a history of cardiovascular disease were observed to have higher mean values for systolic blood pressure, serum triglycerides, and pre-beta-lipoproteins.

- 131 Rosenberg, Irwin; Bowman, Barbara B, et al. "FOLATE NUTRITION IN THE ELDERLY."

See Reference No. 72.

#### DIETARY SUPPLEMENTATION

- 132 Baker, Herman; Frank, Oscar; and Jaslow, Seymour P. "ORAL VERSUS INTRAMUSCULAR VITAMIN SUPPLEMENTATION FOR HYPOVITAMINOSIS IN THE ELDERLY." Journal of the American Geriatrics Society, 28(1), Jan 1980: 42-45.

Despite daily oral vitamin supplementation for 3 to 5 months before the study, 39 percent of the subjects showed deficits of vitamins B-6, B-12, nicotinate, folate, and thiamin. Suggested causes include drug/vitamin antagonism and/or insufficient digestion for proper absorption. Intramuscular injections of multivitamins (with no oral supplement), given in doses sufficient to saturate tissue stores, corrected deficits in 89 to 100 percent of the elderly.

- 133 Duchateau, Jean; Delepesse, Guy; Vrijens, Roger; and Colby, Henri. "BENEFICIAL EFFECTS OF ORAL ZINC SUPPLEMENTATION ON THE IMMUNE RESPONSE OF OLD PEOPLE." American Journal of Medicine, 70, 1981: 1001-1004.

Research data suggest that zinc supplementation may improve some aspects of immune function in the elderly. Zinc sulfat (440 mg) was added to the daily diet of 15 elderly subjects for 1 month. In comparison to a matched control group, significant improvement was noted in several immune parameters (circulating T lymphocytes,

cutaneous hypersensitivity to two purified protein derivatives, IgG antibody response to tetanus vaccine), but no influence was observed on total circulating leukocytes and lymphocytes or in vitro lymphocyte response to selected mitogens.

- 134 Garry, Philip J. "NUTRITIONAL STATUS IN A HEALTHY ELDERLY POPULATION: RIBOFLAVIN."

See Reference No. 107.

- 135 Gershoff, S.N.; Brusis, O.A., et al., "STUDIES OF THE ELDERLY IN BOSTON. I. THE EFFECTS OF IRON FORTIFICATION ON MODERATELY ANEMIC PEOPLE."

See Reference No. 108.

- 136 Harrill, Inez. "NUTRITIONAL STATUS STUDIES IN THE WESTERN REGION: SELECTED ETHNIC AND ELDERLY GROUPS." Nutrition Reports International, 25(1), Jan 1982: 189-199.

Food intake and selected biochemical measurements of nutritional status were determined for 125 women of five ethnic groups and 170 elderly women and men in the western region. Levels of serum iron, carotene, and transferrin saturation in the elderly population exceeded corresponding concentrations in the younger ethnic women. The use of nutrient supplements ranged from 20 percent of elderly men to 55 percent of the New Mexico/Spanish Americans. Ascorbic acid was the nutrient supplement used by the greatest number of participants. For nutrients included in this study, the sample ethnic and elderly groups of the western region, on the average, appeared to be well nourished.

- 137 Harrill, Inez. "RELATIONSHIP OF AGE AND SEX TO NUTRIENT SUPPLEMENTS USAGE IN A GROUP OF ADULTS IN COLORADO." Journal of Nutrition for the Elderly, 1(3,4), Fall/Winter 1981: 51-64.

Concepts and practices related to nutrient supplement usage for young adults were compared with those of older adults in Colorado; 75 percent of all respondents used nutrient supplements. The use of supplements was more prevalent among younger adults than older adults and most prevalent among young women. Multivitamins, iron, vitamins C and E were most often selected for improvement of energy and inadequate diets. Vitamin C was used to prevent colds and other

illnesses. Vitamin A and E were used to benefit hair and nails. Young men and older women used supplements to prevent colds more often than older men and younger women. Other differences related to age and potential hazards of continued use of large amounts of certain vitamins and minerals are discussed.

- 138 Natow, Annette and Heslin, Jo-Ann. "DIETARY SUPPLEMENTS." In Geriatric Nutrition. Boston: CBI Publishing Co., 1980: 189-196.

Sixteen commonly used dietary supplements for the elderly are individually defined and described for use as reference information for educating the elderly on the proper use or need of special dietary supplements. The dietary supplements covered include acidophilus milk, desiccated liver, brewer's yeast, lecithin, garlic, pangamic acid, ginseng, alfalfa, wheat germ, protein supplements, carob powder, and bioflavonoids. The benefits (and some cautions) of using these supplements are indicated.

- 139 Somerville, Peter J.; Lien, John W.K., et al., "THE CALCIUM AND VITAMIN D STATUS IN AN ELDERLY FEMALE POPULATION AND THEIR RESPONSE TO ADMINISTERED SUPPLEMENTAL VITAMIN D-3."

See Reference No. 73.

- 140 Sorensen, Andrew A.; Sorensen, Donna I.; and Zimmer, James G. "APPROPRIATENESS OF VITAMIN AND MINERAL PRESCRIPTION ORDERS FOR RESIDENTS OF HEALTH RELATED FACILITIES." Journal of the American Geriatrics Society, 27(1), Sept 1979: 425-430.

A study of the medical charts of 433 elderly patients in New York State showed that only in 9.9 percent were vitamins or minerals prescribed without an appropriate diagnostic indication; in 1.2 percent, vitamins or minerals were not prescribed when the diagnosis indicated they should have been. In 3.9 percent, a diagnosis indicated the need for vitamins and/or minerals and was accompanied by an appropriate prescription. In 85 percent there was no diagnosis indicating vitamins or minerals and no specific vitamins or minerals, other than a standard multivitamin supplement, were prescribed.

- 141 Vir, Sheila C. and Love, A.H.G. "ZINC AND COPPER STATUS OF THE ELDERLY." American Journal of Clinical Nutrition, 32(7), July 1979: 1472-1476.

Belfast residents, 65 to 95 years old, were studied in two groups - with and without multivitamin supplementation. Plasma and hair cation levels revealed no significant correlation with age or sex, and no correlation with each other. Females receiving multivitamins had higher hair copper levels. In comparison with other studies, mean hair zinc levels were high, whereas mean plasma zinc levels were low, which could not be explained. Mean plasma and hair copper levels were low, but there was no correlation with anemia.

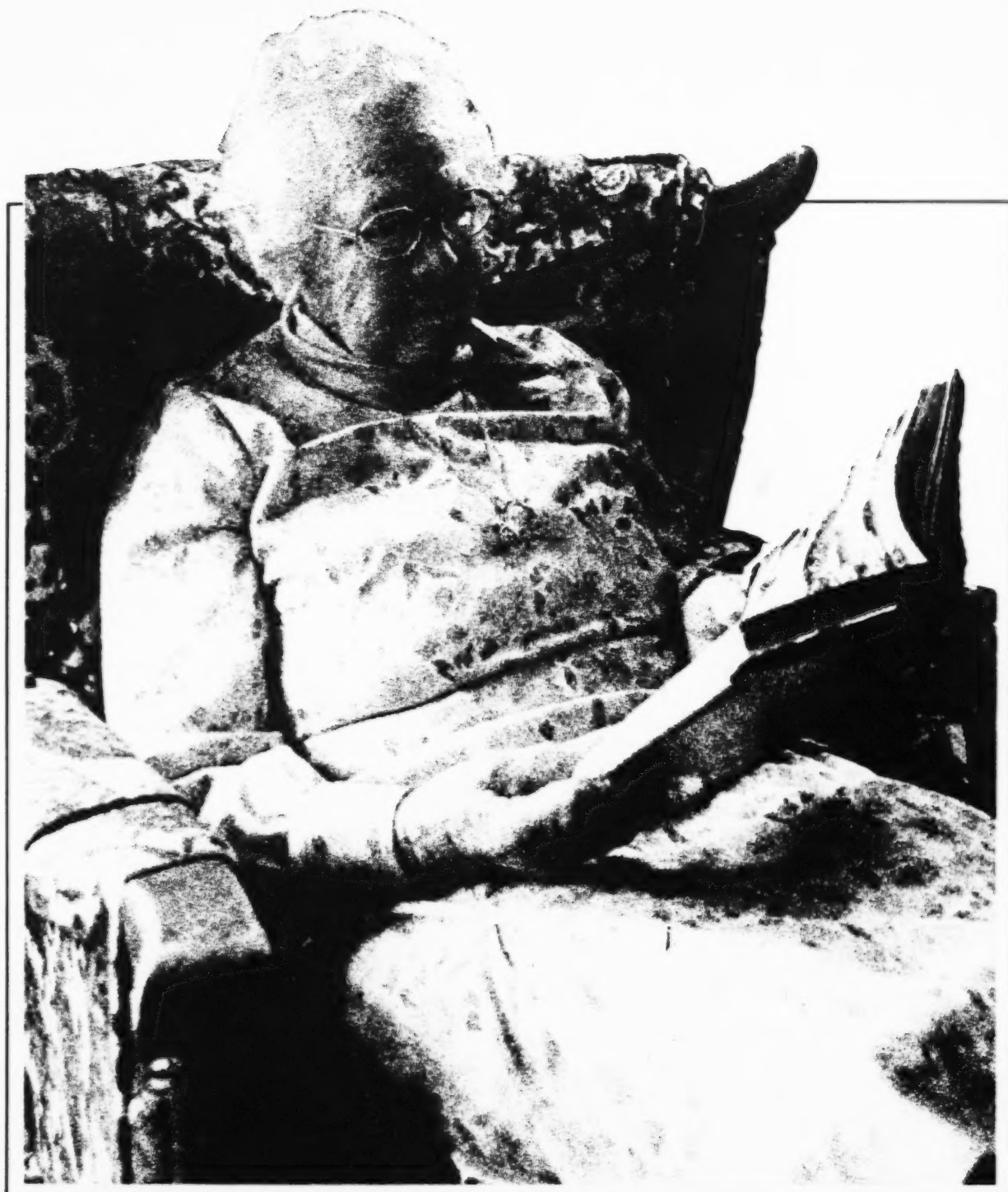
- 142 Yearick, Elisabeth S.; Wang, Mei-Shan, et al., "NUTRITIONAL STATUS OF THE ELDERLY: DIETARY AND BIOCHEMICAL FINDINGS."

See Reference No. 86.



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### III. Metabolism and Nutrient Requirements



## GENERAL

- 143 AGING AND NUTRITION. DIETARY MODIFICATIONS IN DISEASE.

See Reference No. 2.

- 144 BE WELL: HEALTH IN THE LATER YEARS.

See Reference No. 392.

- 145 BE WELL: NUTRITION IN THE LATER YEARS.

See Reference No. 393.

- 146 Franz, Marion. "NUTRITIONAL REQUIREMENTS OF THE ELDERLY." Journal of Nutrition for the Elderly, 1(2), Summer 1981: 39-56.

Questions related to the nutritional requirements of the elderly were assessed on the basis of available literature data. Calories, protein, amino acids, carbohydrate, fat, vitamins A,B,C,D, calcium, iron, sodium, potassium, and fluid studies in the elderly are summarized. Nutritional recommendations are included.

- 147 Gairdner, Moment. NUTRITIONAL APPROACHES TO AGING RESEARCH. Boca Raton, FL: CRC Press, 1982. 266 pp.

A collection of papers presents research findings in the field of nutrition for the elderly. Problems and opportunities related to research work in different areas are explored. Topics included are age-related changes of carbohydrate metabolism; lipids in nutrition and aging; protein and amino acid metabolism and implications for requirements; vitamin status and requirements; trace elements; effects of dietary antioxidants and aging on membrane functions; effects of aging upon intestinal absorption; nutrition and aging of the skeleton; arthritis, food hypersensitivities, and allergies; interaction of alcoholism with nutrition in the elderly; dietary restriction and life extension; and the hypothalamic-pituitary influences on aging.

- 148 Harper, A.E. "RECOMMENDED DIETARY ALLOWANCES FOR THE ELDERLY." Geriatrics, 33(5), May 1978: 73-80.

Requirements for many essential nutrients for the elderly are controversial due to the lack of available information. There is evidence, however, to support the Recommended Dietary Allowance for a protein level of 0.8 gram/kilogram/day (or 12 percent of total caloric needs) and reduced calories to compensate for decreases in lean body mass, resting metabolic rate and physical activity. Therefore, consumption of rich sources of essential nutrients, to the exclusion of refined carbohydrates and fats, is recommended.

- 149 Irwin, M. Isabel. NUTRITIONAL REQUIREMENTS OF MAN: A CONSPECTUS OF RESEARCH. New York: Nutrition Foundation, 1980. 592 pp.

Information on the human requirements for specific nutrients has been brought together from thousands of international sources, both in current research and historical literature. Clinical researchers, nutrition educators, and postgraduate and undergraduate students will find reviews of studies on the needs of healthy people of all ages for protein, amino acids, vitamins A and C, calcium, zinc, iron, copper, and folacin. The status of research on these nutrients can be readily ascertained and used to provide a basis for further investigation or for teaching. Each chapter begins with a general introduction and a review of early studies. Some of the topics included are maintenance requirements, factors that influence nutrient status, needs of specific groups, nutrient reserves and absorption, supplementation, and environmental factors. Comments or conclusions for each section provide a synthesis of current knowledge and identify the needs for further research.

- 150 Keown, Gail M. and Klippstein, Ruth N. POSITIVE LIVING THE SENIOR YEARS.

See Reference No. 15.

- 151 McIntosh, Elaine N. CHANGING NUTRITIONAL NEEDS, PART 6. THE LATER YEARS. Green Bay, WI: University of Wisconsin, 1976. 3/4 inch videotape cassette, color, sound, 29 minutes.

One of a series which presents accurate information on the changing nutritional needs in the life cycle, this videotape concentrates on nutritive needs in relation to physiological changes, as well as common problems encountered by the elderly in attaining proper nutrition.

Can be obtained from Great Plains National ITV Library, Box 80669, Lincoln, NE 68501.

- 152 Munro, Hamish N. "MAJOR GAPS IN NUTRIENT ALLOWANCES. THE STATUS OF THE ELDERLY." Journal of the American Dietetic Association, 76(2), Feb 1980: 137-141.

There is little knowledge of what optimal nutrient intakes are for older persons. The most urgent need is to assess the recommended allowances for each nutrient as age advances; a component for the effects of degenerative diseases on nutrient needs should be included. Greater understanding is needed of nutrient interactions and of the interaction of diet with drugs used by the elderly.

- 153 Munro, Hamish N. "NUTRITIONAL REQUIREMENTS IN THE ELDERLY." Hospital Practice, 17(8), Aug 1982: 143-154.

Whether the nutritional needs of the elderly differ significantly from those of young adults are examined in the light of recent experimental and clinical findings. Attention is given to the intake and needs of specific nutrients (calcium, vitamins D and C, energy, protein) and other factors (vegetarian diets, immunity, nutrient-uptake, and metabolic factors). While lean body mass decreases with age (with an increase in body fat), human studies do not provide evidence that nutritional factors can reduce such mass losses in aging. Animal studies supporting the concept that nutritional intervention may modify the aging process are discussed, especially with respect to food intake levels. Studies on nutritional differences between elderly and young adults indicate a progressive decrease in mean daily energy intake with increasing age, resulting from reduced food (and nutrient) intake. Major gaps in the understanding of nutrition in the aging are cited and discussed.

- 154 RECOMMENDED DIETARY ALLOWANCES, Washington, DC: National Academy of Sciences, 1980. 186 pp.

The intake levels of essential nutrients to meet the known nutritional needs of most healthy human beings as determined by the Committee on Dietary Allowances of the Food and Nutrition Board are presented. Allowances for energy, carbohydrates, fiber and fat, protein and amino acids, vitamins, minerals, trace elements, water, and electrolytes are covered. Determination of allowances, needs of special groups such as pregnant women and infants, and pertinent issues are discussed. Substances for which there is little data also are presented.

#### **SPECIFIC NUTRIENTS-- ENERGY**

- 155 Calloway, D.H. "ENERGY REQUIREMENTS AND ENERGY EXPENDITURE OF ELDERLY MEN." American Journal of Clinical Nutrition, 33(10), Oct 1980: 2088-2092.

Basal metabolic rates (BMR) and energy cost of a few activities were measured in healthy men aged 63 to 77. The men were confined to a metabolic unit for 47 days and received a defined formula diet. Their body weights were 8 to 19 kg higher than that of younger men of the same heights, and their whole body potassium content was 12 percent less than that of younger men (average 28 years of age) studied in the same unit. BMR of the older men was about 1622 kcal/day, a figure 13 percent below the daily rate of younger men. Energy cost of sedentary activities was related to BMR. Expenditure while lying at rest was 1.22 x BMR and while sitting quietly, 1.30 x BMR; these values are the same as in younger men. Walking level at about 2.5 mph cost kcal/min and cycling only slightly more. Energy intake required to maintain body weight of these men, who were sedentary except for 30 min of cycling daily, was approximately 2500 kcal/day, or about 1.6 x BMR. Minimum maintenance energy requirement of healthy older men appears to be 1.5 x BMR, the same as in other age groups.

- 156 Golay, A.; Schultz, Y.; Broquet, C.; Moeri, R.; Feller, J.P.; and Jequier, K. "DECREASED THERMOGENIC RESPONSE TO AN ORAL GLUCOSE LOAD IN OLDER SUBJECTS." Journal of the American Geriatrics Society, 31(3), Mar 1983: 144-148.

Indirect calorimetry was used to assess thermogenic (TG) response in 13 adult-to-elderly subjects (ages 38-68) to a 100 g oral dose of glucose. Results were compared to the TG response determined to the same dose in younger adults (ages 19-30) having similar body weight. The TG response over 180 minutes was found to be reduced in the older group compared to the controls (5.8 percent vs. 8.6 percent of the energy content of the glucose dose). A significant decrease in glucose oxidation rate also was noted for the older group over the test period (153 vs. 213 mg/minute, respectively) despite a similar time course of glycemia. These results may infer the existence of any added factor contributing to decreased energy requirements with age. All subjects received a weight maintenance diet having at least 250-330 g of carbohydrate/day for 3 days before the study.

#### PROTEIN

- 157 Cheng, A.H.R.; Gomez, A.; Bergan, J.G.; Lee, T.C.; Monckeberg, F.; and Chichester, C.O. "COMPARATIVE NITROGEN BALANCE STUDY BETWEEN YOUNG AND AGED ADULTS USING THREE LEVELS OF PROTEIN INTAKE FROM A COMBINATION WHEAT-SOY-MILK MIXTURE." American Journal of Clinical Nutrition, 31(1), Jan 1978: 12-22.



A study designed to determine the protein requirement, efficiency of protein utilization, and digestibility of protein with age revealed no significant differences between eight young and seven elderly subjects. Volunteers were fed diets at protein levels of 0.4, 0.8, and 1.6 gram/kilogram body weight/day. As expected, all participants were in negative nitrogen balance at the 0.4 gram level; approximately half of each age group were in negative balance at the 0.8 gram level and all were in positive nitrogen balance at the 1.6 gram level. Results support current National Research Council recommendations of 0.8 gram/kilogram/day of high biological value protein for adults of all ages.

- 158 Gambert, Steven R. and Guansing, Alejandro R. "PROTEIN-CALORIE MALNUTRITION IN THE ELDERLY."

See Reference No. 257.

- 159 Gersovitz, Mitchell. "HUMAN PROTEIN REQUIREMENTS: ASSESSMENT OF THE ADEQUACY OF THE CURRENT RECOMMENDED DIETARY ALLOWANCE FOR DIETARY PROTEIN IN ELDERLY MEN AND WOMEN." American Journal of Clinical Nutrition, 35(1), Jan 1982: 6-14.

A continuous 30-day metabolic nitrogen (N) balance study was conducted in seven elderly men (mean age, 75) and eight elderly women (mean age, 78) to evaluate the current protein RDA for elderly men and women. Subjects received a diet providing 0.8 g of egg protein. Energy intake computed to meet needs averaged 32 and 29 kcal/kg/day for males and females, respectively. N balances, including an estimate for integumental and other miscellaneous losses, were determined for the last 5 days of three consecutive 10-day diet periods, and blood biochemical measurements were made at the end of each diet period. Three of seven males and four of eight females were not in body N balance during the final 5 days of the 30-day period. These N balance data indicate that 0.8 egg protein/kg/day is not sufficient to achieve N equilibrium in a majority of subjects older than 70 years.

- 160 Matthews, Lorraine E. "PROTEIN REQUIREMENTS IN THE ELDERLY." Journal of Nutrition for the Elderly, 2(2), Winter 1982: 35-38.

Assessment of the protein requirements of the elderly living in a skilled nursing facility (SNF) can be complicated by chronic disorders and debilitation associated often with old age. The 1980 RDA commentary recommended that elderly receive at least 12 percent of their calories from food protein (50 g of protein in an 1,800 calorie



diet). A recent study indicated that dietary nitrogen retention efficiency, expressed relative to current body cell mass, is lower in the elderly. While in most SNFs, physical decline from aging induces factors that make eating and the use of adequate diets more difficult, the latter are at the same time more essential. The SNF must realize that not all of the diet will be eaten. Studies indicate that the subjects with the fewest ailments consume the most complete diets. The RDAs are still the best guide available, and the SNF menu must provide high quality protein foods and few empty calories.

- 161 Mitchell, C.O. "DETECTION OF PROTEIN-CALORIE MALNUTRITION IN THE ELDERLY."

See Reference No. 62.

- 162 Winterer, Joerg C.; Steffee, William P.; Davy, W.; Perera, A.; Uauy, Ricardo; Scrimshaw, Nevin S.; and Young, Vernon R. "WHOLE BODY PROTEIN TURNOVER IN AGING MAN." Experimental Gerontology, 11(3/4), 1976: 79-87.

Results from nine healthy subjects over 65 are compared to eight subjects aged 18-25. Whole body protein synthesis decreases with age and is associated with the loss of body cell mass. As aging continues, the internal organs, as opposed to the skeletal muscles, contribute increasingly to the whole body protein synthesis and breakdown. Total body protein synthesis and breakdown rates are lower for women than for men and significantly lower for the elderly women as compared to the younger women.

- 163 Young, Vernon R. and Scrimshaw, Nevin S. "PROTEIN NEEDS OF THE ELDERLY." Urban Health, 4(4), Aug 1975: 37-39.

A review of studies investigating protein requirements indicates that a greater safety margin is needed in protein allowances for the elderly than in those for young adults. Disease states tend to increase protein losses and decrease protein absorption, and such ill health is prevalent in the elderly. When energy intake is adequate, 1.0 grams of protein/kilogram/day should maintain adequate protein status.

## MINERALS

- 164 Burke, D.M.; Demicco, F.J.; Taper, L.J.; and Ritchey, S.J. "COPPER AND ZINC UTILIZATION IN ELDERLY ADULTS." Journal of Gerontology, 36(5), 1981: 558-563.

A 30-day metabolic study of elderly adults given 2.33 mg copper (Cu) and either 7.8 or 23.26 mg of zinc daily supported previous findings indicating antagonism between the two nutrients. While subjects were able to maintain a positive balance for copper, they remained in negative zinc balance on both levels of zinc intake. Copper retention was significantly reduced by higher zinc intakes. Hair content of both nutrients was higher in females than males, indicating long term adequate intakes.

- 165 Heaney, Robert P.; Gallagher, J.C.; Johnston, C.C.; Neer, Raker; Parfitt, M.B.; Chir, B.; and Whedon, Donald G. "CALCIUM NUTRITION AND BONE HEALTH IN THE ELDERLY." American Journal of Clinical Nutrition, 36(5), Nov 1982: 986-1013.

A comprehensive review is presented concerning the interrelationships of calcium (Ca) nutriture with bone health. Various aspects of effective Ca intakes, Ca dietary requirements, and health implications of Ca deficiency in the elderly, and potential toxic effects of high Ca intakes are addressed. The typical elderly individual is in negative Ca balance and is losing bone mass. Inadequate Ca intake may contribute to this loss. Males and females in the United States over 65 ingest about 600 and 480 mg/day of Ca, respectively. Elderly Ca intake is less than in the young, and reduced Ca absorption efficiency further lowers the effective Ca intake. Excess protein and fiber increase the Ca requirement, while estrogen withdrawal at menopause decreases Ca absorption and renal Ca conservation. Data suggest Ca requirements for the elderly should be at least 1200-1500 mg/day.

- 166 IRON ABSORPTION AND UTILIZATION IN THE ELDERLY." Nutrition Reviews, 37(7), July 1979: 222-224.

Several studies which attempt to determine whether absorption of inorganic iron normally is reduced in the elderly are summarized. Results indicate that the normal elderly have no evidence of decreased iron absorption; iron stores, in fact, are somewhat normal or greater than in younger subjects. It is suggested this is due to a decrease in muscle mass or ineffective erythropoiesis.

- 167 Lindeman, Robert. "MINERAL METABOLISM IN THE AGING AND THE AGED." Journal of the American College of Nutrition, 1, Nov 1982: 49-73.

Literature is reviewed concerning the pathophysiology, causes, and consequences of deficiencies and excesses of sodium, potassium, calcium, and magnesium; and concerning selected aspects of iron, zinc, copper, manganese, selenium, chromium, and cadmium metabolism as encountered in the elderly. Limited available information concerning the effect of aging on the utilization of these minerals is also discussed, making evident the need for additional studies. Iron and zinc are the two most abundant trace elements in the body, respectively. The role of the latter in the biochemistry and pathophysiology of disease is receiving increasing attention. Attention is also being given to the effect of deficiencies of other trace elements and their relevance in human nutrition.

- 168 Lynch, Sean R. "IRON STATUS OF ELDERLY AMERICANS." American Journal of Clinical Nutrition. 36(5), Nov 1982: 1032-1045.

Studies of iron nutriture in the elderly are limited and very few include observations on individuals over age 75. The two Health and Nutrition Surveys (HANES) carried out by the U.S. Department of Health, Education and Welfare demonstrate that the mean iron intake of Americans is adequate until age 75. However, with changes in the major food sources, there is a decrease in iron derived from meat and a concomitant rise in the proportion supplied by breakfast cereals. Alterations in dietary bioavailability that may result from this have not been studied. Physiological data suggest that the elderly do not represent a target population for iron deficiency; however, laboratory measures useful in determining iron status for younger people have not been standardized for older people. Hemoglobin (Hb) and hematocrit measurements are not suitable screening tests for iron deficiency in the elderly, and there is an urgent need for a clearer understanding of the physiological and nutritional factors responsible for lower Hb values in older people, particularly older black Americans.

- 169 Marx, J.J.M. "NORMAL IRON ABSORPTION AND DECREASED RED CELL IRON UPTAKE IN THE AGED." Blood, 53(2), Feb 1979: 204-211.

Mucosal uptake, mucosal transfer, and ultimate retention of iron are determined after administration of ferrous sulfate to healthy young, active elderly, and a mixed age group of persons with iron-deficiency anemia. Iron absorption values are similar for aged and young adult subjects. Both young and old patients with iron deficiency show increased uptake, transfer, and retention of iron. When red cell iron uptake was studied, young adults utilized 91 percent of the retained, orally administered iron versus 66 percent for the aged. Ineffective erythropoiesis in the elderly is suggested as the cause.

- 170 Nordin, B.F.C.; Wilkinson, R.; Marshall, D.H.; Gallagher, J.C.; Williams, A.; and Peacock, M. "CALCIUM ABSORPTION IN THE ELDERLY." In Calcified Tissues 1975, edited by S. Pors Nielsen and E. Hjørtting-Hansen. Copenhagen: FADL Publishing Co., 1975: 442-451.

Studies with elderly subjects have shown a significant and progressive fall in calcium absorption with age. Two possible explanations are vitamin D deficiency and acquired "resistance" to vitamin D associated with impaired hydroxylation of 25-hydroxycholecalciferol to 1,25-dihydroxycholecalciferol. Data indicate the first appears more likely below 70 years of age, the second more likely a factor after 70. Impaired renal function may be a factor in calcium malabsorption.

- 171 Nordstrom, James W. "TRACE MINERAL NUTRITION IN THE ELDERLY." American Journal of Clinical Nutrition, 36(4), Oct 1982: 788-795.

The potential for trace element malnutrition in the elderly appears to be considerable, but few studies have focused on trace mineral nutrition in the elderly. Research findings on five trace elements (iron, zinc, copper, chromium, fluoride) are individually examined. Two large nutrition surveys concerning anemia and iron status of black, white, and Spanish American adults over the age of 59 showed lower mean iron intakes for blacks, suggesting that diet accounts partly for hemoglobin differences observed between the races. While decreased iron absorption was reported in old age, another study reported no difference in ferrous sulfate absorption between healthy young adults and active elderly persons. However, elderly persons used the absorbed iron less effectively. Adult zinc deficiency appears to be associated with certain diseases, severe tissue injury, or marginal intake, but zinc hair levels in persons over 65 are greater than for younger age groups. Copper deficiency has not been a significant problem for the elderly, while chromium deficiency and its impact on health remains to be established. The role of fluoride in decreasing dental caries and osteoporosis is discussed.

- 172 Offenbacher, Esther G. "BENEFICIAL EFFECT OF CHROMIUM-RICH YEAST ON GLUCOSE TOLERANCE AND BLOOD LIPIDS IN ELDERLY SUBJECTS." Diabetes, 29(11), Nov 1980: 919-925.

Daily dietary supplementation of chromium-rich brewer's yeast significantly improved glucose tolerance and insulin sensitivity, and lowered cholesterol and total lipids in elderly persons, while chromium-poor torula yeast (control) did not. The 24 subjects (mean age 78), including eight who were mildly diabetic and not dependent on insulin, were randomly assigned to either experimental or control

groups. Serum glucose and insulin response to 100 g oral sucrose was measured at 30 min in control subjects. No significant change in glucose tolerance, insulin output, triglycerides, or total lipids was observed. These data support the view that elderly persons may exhibit low chromium levels, and brewer's yeast may be an effective source for chromium repletion. Both brewer's and torula yeast may also contain a hypocholesterolemic factor.

- 173 Schuette, Sally A.; Zemel, Michael B.; and Linkswiler, Helen M. "STUDIES ON THE MECHANISM OF PROTEIN-INDUCED HYPERCALCIURIA IN OLDER MEN AND WOMEN." Journal of Nutrition, 110(2), Feb 1980: 305-315.

In order to determine whether the level of protein intake affects the urinary calcium and calcium balance, and the mechanism of such a response, this study increased protein intake while maintaining constant intakes of calcium, magnesium, and phosphorus. An immediate increase in urinary calcium and a decrease of calcium retention resulted. Further data showed the mechanism to be an increased rate of glomerular filtration and a decreased fractional renal tubular reabsorption of calcium.

- 174 Spencer, Herta and Kramer, Lois. "FACTORS CONTRIBUTING TO CALCIUM LOSS IN AGING." American Journal of Clinical Nutrition, 36(4), Oct 1982: 776-787.

Factors that might induce calcium (Ca) loss and promote or intensify osteoporosis in persons at risk because of aging are considered. The potential factors reviewed include: dietary aspects (prolonged low Ca intake, effect of phosphorus (P) and of the dietary Ca/P ratio on Ca utilization, effect of protein on Ca metabolism), the effect of drugs on Ca metabolism, thyroid status, and other factors (chronic alcohol ingestion, effects of combined use of drugs on Ca loss; and the synergistic effect of alcohol, antacids, and drugs). Several commonly used medications induce Ca loss and may contribute to and accelerate bone loss in aging. Widely varying dietary Ca/P ratios do not alter intestinal Ca absorption or promote Ca loss. A high natural protein intake (from meat) does not increase urinary Ca or Ca loss. Intestinal Ca absorption during high Ca intake, however, is considerably lower in older persons. The recommended dietary Ca intake (800 mg/day) appears insufficient to maintain Ca equilibrium in osteoporosis patients; a Ca intake of 1200 mg/day is preferred.

## VITAMINS

- 175 Baker, Herman; Jaslow, Seymour P.; and Frank, Oscar. "SEVERE IMPAIRMENT OF DIETARY FOLATE UTILIZATION IN THE ELDERLY." Journal of the American Geriatrics Society, 26(5), Apr 1978: 218-221.

In order to determine etiology of folate deficiency which is common in the elderly, aged and young subjects were fed yeast and synthetic folymonoglutamate to measure folate, vitamin B-6, pantothenate, and riboflavin absorption. While all subjects absorbed riboflavin, B-6 and pantothenate, the elderly subjects did not absorb folylpolyglutamates from the yeast. Synthetic folylomonglutamates, however, were absorbed and do seem to be a good source of folates for the elderly. Impaired digestive and absorptive capabilities of the aging gastrointestinal tract are suggested causes for folate malabsorption.

- 176 Flint, D.M. and Prinsley, D.M. "VITAMIN STATUS OF THE ELDERLY."

See Reference No. 57.

- 177 Parfitt, Michael A.; Chir, B.; Gallagher, J.C.; Heaney, Robert P.; Johnston, C.C.; Neer, Robert; and Whedon, Donald. "VITAMIN D AND BONE HEALTH IN THE ELDERLY." American Journal of Clinical Nutrition, 36(5), Nov 1982: 1014-1031.

A comprehensive review is presented concerning the interrelationships of vitamin D nutriture with bone health in the elderly. Specific attention is given to the chemistry and physiology of Vitamin D; endogenous and exogenous sources and supply of this vitamin; hypovitaminosis D; VtD deficiency and its health implications in the elderly; Vitamin D requirements for the elderly; and potential toxic effects associated with high Vitamin D intakes. The status of Vitamin D nutriture depends on synthesis in the skin under sunlight, as well as on dietary Vitamin D intake. Elderly in European countries not using Vitamin D-fortified milk who have reduced sun exposure suffer a fall in Vitamin D body stores with age, leading to a high frequency of hypovitaminosis D in the sick elderly. While the situation in the United States appears far superior to this, Vitamin D body stores probably fall with age in the United States as they do in Europe. The Vitamin D requirement increases with age, with a total supply of 15-20 micrograms/day (600-800 IU) from all sources being recommended. Special attention should be given to elderly who are housebound, having malabsorption problems, or having interruption of enterohepatic circulation.



- 178 Riccitelli, M.L. "THE ROLE OF VITAMIN C IN THE AGING PROCESS: CURRENT CONCEPTS." Clinical Medicine, 81(5), May 1974: 49-51.

Functions of vitamin C in maintaining the ground substance in which connective tissue is imbedded, maintaining activity of lipoprotein lipase (which clears lipids from the blood), and in carbohydrates and protein metabolism are described. During stress, destruction of and, therefore, requirement for vitamin C increases. A new method of therapy calls for administering vitamin C twice daily in sustained release capsules, thus maintaining continuous and adequate blood levels.

- 179 Rosenberg, Irwin H.; Bowman, Barbara B., et al., "FOLATE NUTRITION IN THE ELDERLY."

See Reference No. 72.

#### FIBER

- 180 Persson, I.; Raby, K.; Fonss-Bech, P.; and Jensen, E. "EFFECT OF PROLONGED BRAN ADMINISTRATION ON SERUM LEVELS OF CHOLESTEROL, IONIZED CALCIUM AND IRON IN THE ELDERLY." Journal of the American Geriatrics Society, 24(7), July 1976: 334-335.

Ten to 20 grams of unprocessed wheat bran were added to the diets of two groups of healthy subjects (mean age 69 years) over a period of 6 weeks. There was a significant lowering of serum cholesterol, ionized calcium, and iron levels. The authors warn that serum levels of iron and ionized calcium often are abnormally low in the elderly.

#### IV. Aging and Nutritional Status



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## PHYSIOLOGICAL CHANGES

- 181 Anderson, Evelyn L. "EATING PATTERNS BEFORE AND AFTER DENTURES." Journal of the American Dietetic Association, 58(5), May 1971: 421-426.

The eating patterns of men at two Veterans Administration domiciliaries and persons attending a dental clinic in North Carolina were studied before and after insertion of dentures. The only difference was that less bread and more crisp raw vegetables were eaten when dentures were worn. The eating patterns of the veterans were better than those of the clinic group, suggesting that older persons in institutions will eat nutritious foods if they have the opportunity.

- 182 Barrows, Charles H. and Schlenker, Eleanor D. NUTRITION AND AGING. Washington, DC: Government Printing Office, 1979. NIH Publication No. 79-1409.

The authors' presentations, given at the State of the Art Seminar on Aging Research, Baltimore, Maryland, October 1976, are summarized. Dr. Barrows proposes that nutritional restriction, particularly protein restriction, significantly lengthens lifespan and either delays the onset of disease or decreases incidence of adenomas in laboratory animals. Dr. Schlenker provides limited information from longitudinal studies relating restricted intakes of various nutrients to increased lifespans in humans. Relationships between papillae atrophy and nutrient intake, and vitamin C deficiency and mortality are presented.

- 183 Bazzarre, Terry L. "AGING AND NUTRITION EDUCATION."

See Reference No. 356.

- 184 Berman, Phillip M. and Kirsner, Joseph R. "THE AGING GUT. I. DISEASES OF THE ESOPHAGUS, SMALL INTESTINE, AND APPENDIX." Geriatrics, 27(3), Mar 1972: 84-90.

The gastrointestinal tract generally maintains an adequate level of functioning throughout life. Alteration or decrease in function and change in anatomical structure may cause digestive problems, but most conditions are due to underlying diseases and drug use. Aging seems to make the gut more susceptible only to cancer. Contributing factors, incidence, and diagnosis of cancer of the aging digestive system are discussed. Presbyesophagus (disorganized and inefficient contractions), achalasia and hiatus hernia are the most common

disorders of the esophagus. Gastric motility and hydrochloric acid secretion are reduced. Peptic ulcer and its complications are noted to be more often due to drug use. The small intestine shows decreased absorption of d-xylose, thiamin, vitamins B-12 and A, carotene, folic acid, and fat. After acute appendicitis, postoperative convalescence is prolonged by higher incidence of infection and slower wound healing.

- 185 Berman, Phillip M. and Kirsner, Joseph B. "THE AGING GUT. II. DISEASES OF THE COLON, PANCREAS, LIVER, AND GALLBLADDER, FUNCTIONAL BOWEL DISEASE, AND IATROGENIC DISEASE." Geriatrics, 27(4), Apr 1972: 117-124.

Overall, there is no specific disease of gastrointestinal aging. The colon thickens but maintains its strength. Diverticular disease is common and is treated with a high residue diet, avoidance of bowel irritants, and occasional medication. The frequency and number of adenomas increase. The pancreas undergoes atrophy and increase in adipose tissue, but secretions do not decrease. Cholelithiasis is not uncommon, but intolerance of fatty foods is not a reliable symptom of gallstones. Physical and emotional problems and dietary indiscretion may cause functional bowel disease. Iatrogenic diseases of the gastrointestinal tract include changes due to laxative abuse, erosive gastritis, jaundice and hepatitis due to drug use, and inflammation due to pelvic area irradiation.

- 186 Epstein, S. "DENTAL CARE AND THE AGING." Perspective on Aging, 5(6), Nov/Dec 1976: 14-17.

Oral changes that occur with aging include loss of bone and supporting tissues which result in loosening of teeth and increasing sensitivity to temperature change. Soft tissues become thinner and the palate is easily cut by rough pieces of food and denture pressure. Secretion of saliva lessens, making swallowing more difficult unless food is presoftened or soaked in liquid. Decreasing taste sensation, except for sweet, may alter food selection and result in craving for sweets.

- 187 FOOD TO LIVE ON. PART 3. THE MATURING YEARS. Orlando, FL: Tupperware Educational Services, 1978. 35 mm filmstrip (74 frames) with audiocassette (13 min) and a Teacher/Leader guide.

Nutrition concepts and recommendations are presented in context of those environmental, social, and emotional factors that influence food choices at various life stages. The "Maturing Years" focuses on the nutrition needs and the physical, emotional, and social problems of

older Americans; and suggests ways young people can help elderly friends or relatives.

Can be obtained from Tupperware Educational Services, Department 78, P. O. Box 2353, Orlando, FL 32802

- 188 Gaeta, Michael J. and Gaetano, Ronald J. "NUTRITION AND DIGESTIVE DISORDERS OF OLD AGE." In The Elderly. Their Health and the Drugs in Their Lives, by Michael J. Gaeta and Ronald J Gaetano. Dubuque, IA: Kendall/Hunt Publishing Co., 1977: 89-104.

Aging is accompanied by physical and mental change which affect all body systems and tissues. Medical information and health facts on aging are presented in layman's terms. Frequently occurring health problems of the elderly are described, including digestive disorders.

- 189 Greenblatt, D.J. "REDUCED SERUM ALBUMIN CONCENTRATION IN THE ELDERLY: A REPORT FROM THE BOSTON COLLABORATIVE DRUG SURVEILLANCE PROGRAM."

See Reference No. 109.

- 190 Greene, Joncier. "NUTRITIONAL CARE CONSIDERATIONS OF OLDER AMERICANS." Journal of the National Medical Association, 71(8), Aug 1979: 791-793.

The process of aging may result in several physiological changes: (1) decline in lean body mass, metabolic rate, and physical activity, (2) decreased salivation, (3) decreased sensitivity of tastebuds and olfactory receptor cells, (4) reduced bile and enzyme secretion, (5) loss of teeth, (6) skeletal loss and reduced absorption of calcium, (7) increased incidence of hypertension, diabetes, and obesity, (8) decreased vitamin absorption, and (9) anemia due to uncertain causes. Restricted foods for low sodium diets and guidelines for calculation of diabetic and low calorie diets are presented. Individualization of the diet and purposeful communication with the patient are emphasized.

- 191 Grzegorzczuk, Phyllis B.; Jones, Shirley; and Mistretta, Charlotte M. "AGE-RELATED DIFFERENCES IN SALT TASTE ACUITY." Journal of Gerontology, 34(6), Nov 1979: 834-840.

Salt taste detection thresholds increased with age in subjects 23 to 92 years, but the change was not as great as previously reported. The authors suggest that using a forced choice, staircase procedure with

distilled water rinses between all stimuli controls for subjects response bias and eliminates adaptation to salivary sodium.

- 192 Hefarty, P. Vincent. NUTRITION AND THE AGING PROCESS. Chicago, IL: American Dietetic Association, 1978, Audiocassette Series (ACS) 10-78, with study guide.

Dr. Vincent Hefarty, Associate Professor of Human Nutrition, University of Minnesota, explores the concern, "Is the R.D. helping the elderly receive their optimal nutrient intake?"

Can be obtained from the American Dietetic Association, 430 North Michigan Avenue, Chicago, IL 60611.

- 193 Kamath, S.K. "TASTE ACUITY AND AGING." American Journal of Clinical Nutrition, 36(4), Oct 1982: 766-775.

Aging has been attributed in large measure either to loss of organ system cells or to reduction in cellular metabolism; this is also true of the taste cells. Taste aids in regulating food intake and avoidance of toxic substances, and may be solely responsible for certain dietary preferences. The physiology of taste buds and cells, taste sensitivity and modalities, and the evaluation of taste and its sensitivity with aging are considered. Variations between individuals arising from various phenomena (adaptation, taste inhibition, and modification), and variations in approaches to the studies, age groups, and controls considered make it difficult to conclude that taste acuity decreases with aging. Further study is needed before assumptions or conclusions relating taste aberrations to aging can be made. The existing data indicate that taste is not the sole determinant of food intake, since eating is an important psychosocial activity. For the elderly, social factors (loss of mate, fear of old age and changing roles, feeling of rejection) cause stress which may cause appetite loss and reduced food intake. Diet should be modified to provide the needed nutrients according to individual likes or dislikes, and general lifestyle.

- 194 Kaplan, Herman. "THE ORAL CAVITY IN GERIATRICS." Geriatrics, 26(12), Dec 1971: 96-102.

Effects of aging on the oral cavity include changes in the teeth, the gingivae, the tongue, the oral mucosa, and the salivary glands. These changes and problems which may result are described, solutions are considered, and some implications for nutrition are mentioned.



- 195 Keown, Gail M. and Klippstein, Ruth N. POSITIVE LIVING IN THE SENIOR YEARS.

See Reference No. 15.

- 196 McIntosh, Elaine N. CHANGING NUTRITIONAL NEEDS, PART 6. THE LATER YEARS.

See Reference No. 151.

- 197 Mitchell, C.O. "DETECTION OF PROTEIN-CALORIE MALNUTRITION IN THE ELDERLY."

See Reference No. 62.

- 198 Montgomery, R.D.; Haeney, M.R.; Ross, I.N.; Sammons, H.G.; Barford, A.V.; Balakrishnan, S.; Mayer, P.P.; Culank, L.S.; Field, J.; and Gosling, P. "THE AGEING GUT: A STUDY OF INTESTINAL ABSORPTION IN RELATION TO NUTRITION IN THE ELDERLY." Quarterly Journal of Medicine, 47(186), Apr 1978: 197-211.

Fifteen of 50 elderly subjects are diagnosed as showing malabsorption on the basis of xylose, B-12, and iron absorption tests, evaluations for fecal fat and urinary indican, radiology, duodenal aspirations and jejunal biopsy. Findings attribute malabsorption to small bowel diverticulosis, contaminated bowel, amyloidosis, chronic pancreatic insufficiency and possibly silent mesenteric arterial disease. While the corrected 1-hour blood xylose test is the most useful indicator of malabsorption, no single screening procedure is available to recognize the variety of malnutrition states discovered in this study.

- 199 Munro, Hamish N. "NUTRITIONAL REQUIREMENTS IN THE ELDERLY."

See Reference No. 153.

- 200 Natow, Annette. "NUTRITION IN THE LATER YEARS."

See Reference No. 369.

- 201 Natow, Annette and Heslin, Jo-Ann. "HOW AGING AFFECTS THE BODY." In Geriatric Nutrition. Boston: CBI Publishing Co., 1980: 14-25.

Advanced age is associated with nonuniform changes in the various body tissues, resulting in loss of cells and lower energy levels of the remaining cells. Changes in major body systems (cardiovascular, respiratory, renal, neuromuscular, nervous, endocrine, gastrointestinal) and the concomitant changes in body composition are discussed. Cardiac output (heart rate times stroke volume) decreases from age 19 by about 40 percent by age 65, with a redistribution of body circulation. Maximum breathing capacity is reduced by 40 percent between ages 20-80, causing less rapid turnover of lung air in the elderly. Blood flow to the kidneys is reduced about 55 percent between age 35 and 80, increasing the possibility of drug toxicity. Dietary intake is influenced by loss of teeth, a decline in taste discrimination, and swallowing difficulties caused by decreased salivary secretion. Nutrient uptake is affected by impaired intestinal absorption for thiamine, folic acid, fat, and calcium. A variety of other related changes accompanying aging are discussed.

- 202 Nizel, Abraham E. "ROLE OF NUTRITION IN THE ORAL HEALTH OF THE AGING PATIENT." Dental Clinics of North America, 20(3), July 1976: 569-584.

Nutrition is important in the development and treatment of the elderly's oral problems. Loss of taste, particularly to salt, is associated with inadequacy of vitamin A. Xerostomia (reduced salivary flow) provides an environment conducive to the growth of cariogenic bacteria. The painful burning tongue is associated with folic acid, vitamin B-12, and iron-deficiency anemia. Malnutrition and diabetes can aggravate gingivitis and periodontitis. The alveolar bone is subject to resorption as teeth are lost and osteoporosis develops. An office procedure (the design is given) to assess intake evaluates adequacy, and prepares a dietary prescription emphasizing the quality of foods eaten.

- 203 NUTRITION IN AGING. Series: Introductory Principles of Nutrition. Audiocassette. Pennsylvania State University, 1978.

The physiological aspects of aging and the role of nutrition in the aging process are discussed. Aging is a natural biological process, however, nutritional intake can encourage or delay aging. The economic, social, and physical restrictions placed on the elderly affect their eating habits.

- 204 NUTRITION IN AGING. University Park, PA: Pennsylvania State Univ., 1977. 3/4 inch videocassette, sound, color, 42 minutes.

The changing biological processes and nutritional needs of elderly people are explained. Though nutrition seems to have little influence on the aging process, it does affect health and enjoyment. The three theories on the causes of aging are changes in DNA, interaction of environment with DNA, or random occurrences. Protein synthesis seems particularly vulnerable in aging. Physiological changes which can affect nutrition in the elderly include tooth loss; saliva decrease; digestion difficulties; bile decrease; muscle control; and work capacity of heart, lungs and kidney. Common deficiencies in nutrition are calories, calcium, iron and vitamin C. Supplements usually do not provide for these needs. Elderly people suffer less stress; aging can be enjoyable for those in good health who can avoid the problems of isolation, inflation, fear, or discrimination.

- 205 Pitcher, J.L. "DYSPHAGIA IN THE ELDERLY: CAUSES AND DIAGNOSIS." Geriatrics, 28(10), Oct 1973: 64-69.

Difficulty in swallowing is common in elderly persons and may be caused by either solids or liquids. The different types, etiologies and diagnostic methods are described.

- 206 Rao, Dodda B. "PROBLEMS OF NUTRITION IN THE AGED."

See Reference No. 28.

- 207 Schiffman, Susan. "FOOD RECOGNITION BY THE ELDERLY." Journal of Gerontology, 32(5), Sept 1977: 586-592.

Common foods were blended to reduce textural cues, then tasted by 27 college-age and 29 elderly (mean age 73 years) blindfolded subjects. Results showed considerable loss in accuracy of food recognition in the elderly, with decline in smell sensitivity more important than decline in taste sensitivity. Foods were rated on adjective scales; results were one-dimensional for the elderly, two-dimensional for the younger subjects, and indicated more discrimination among foods for the younger subjects.

- 208 Schiffman, Susan and Pasternak, Marcy. "DECREASED DISCRIMINATION OF FOOD ODORS IN THE ELDERLY." Journal of Gerontology, 34(1), Jan 1979: 73-79.

Multidimensional maps of commercial food flavors, obtained from ratings of similarity of odors, suggest that the ability to differentiate between simulated food odors lessens with age. This may

be due to primary sensory loss caused by general neural loss and changes in olfactory receptor cells, and to impaired memory. Elderly subjects were best at discriminating fruits from the rest of the stimuli. This study points to the reliance which the elderly must place on texture and visual cues for correct identification of foods.

- 209 Schiffman, Susan S.; Hornack, Karen; and Reilly, Debra. "INCREASED TASTE THRESHOLDS OF AMINO ACIDS WITH AGE." American Journal of Clinical Nutrition, 32(8), Aug 1979: 1622-1627.

The elderly show a decreased sensitivity to taste in a study designed to determine the taste detection thresholds of young and aged subjects. Several explanations for the age-related decline in taste acuity are discussed.

- 210 Shock, Nathan W. "PHYSIOLOGIC ASPECTS OF AGING." Journal of the American Dietetic Association, 56(6), June 1970: 491-496.

Findings are reported from the first 10 years of a longitudinal study of 700 men, 26 to 96 years of age, at the Gerontology Research Center in Baltimore, Maryland. Fasting blood glucose levels remain constant over time, but the adjustment to stress is slower with age. Gradual decrements are shown in cardiac output (30 percent), renal blood flow (50 percent) basal metabolic rate (20 percent), and maximum breathing capacity (50 percent). Nutritional requirements are not shown to change with age. Caloric intake falls progressively with age, and intake of other nutrients falls to a lesser extent; only for calcium are any of the intakes below the RDA.

- 211 Watkin, Donald. "THE PHYSIOLOGY OF AGING." American Journal of Clinical Nutrition, 36(4), Oct 1982: 750-758.

Several classic examples of physiologic changes with advancing age are given to illustrate the complexity of the interrelations among changing organ and metabolic systems, and to examine the mutual relationships of physiologic aging and disease and the potential role of nutrition in resolving problems created by physiologic aging. In the United States, only three forms of death are often accepted socially: pure old age; myocardial infarction; and auto accident. Death by auto accident cannot be accepted by reasonable people; further, myocardial infarction should no longer be looked upon as socially acceptable because of its marked reduction since 1955, as associated with beneficial changes in lifestyle and nutrition. Hence, old age should be regarded as the only socially acceptable cause of death, and then only when a person is approaching the technical

lifespan limit. Nutrition can be used as a means to enhance long life. When human genetics are better understood, genetic engineering may avoid the deleterious effects of physiologic aging. In the interim, sound nutrition can realistically assist people to attain an age of 100 with good health and unimpaired physiologic functions.

#### **SOCIO-BEHAVIORAL CHANGES**

- 212 Axelson, Marta L. and Penfield, Marjorie P. "FOOD AND NUTRITION-RELATED ATTITUDES OF ELDERLY PERSONS LIVING ALONE." Journal of Nutrition Education, 15(1), 1983: 23-27.

An interview survey was conducted on a group of 66 retired subjects comprised principally of white widowed females, age 60 or older. Food and nutrition attitudes were assessed by use of 97 belief statements relating food and nutrition to food use, cost, convenience, health, social status, aesthetic perceptions, and quality. The response were analyzed by factor analysis, and individual attitude scores were calculated. The four salient attitude factors found were: social-adventuresome, frugal-utilitarian, qualitative-pleasurable, and nutritious-healthful. While these attitudes were predominant, the respondents varied in their agreement with each of the attitude factors. Since these factors have been observed with other population groups, sorting a population by age rather than needs may not be the most optimum approach to the development of food and nutrition education programs.

- 213 Clancy, Katherine L. "PRELIMINARY OBSERVATIONS ON MEDIA USE AND FOOD HABITS OF THE ELDERLY."

See Reference No. 352.

- 214 FOOD TO LIVE ON. PART 3. THE MATURING YEARS.

See Reference No. 187.

- 215 Grotkowski, Myrna L. and Sims, Laura S. "NUTRITIONAL KNOWLEDGE, ATTITUDES, AND DIETARY PRACTICES OF THE ELDERLY." Journal of the American Dietetic Association, 72(5), May 1978: 499-506.

Nutrition knowledge, attitudes, and beliefs of 64 noninstitutionalized elderly persons (average age 72 years) were examined in relation to

actual dietary behavior as measured by nutrient intakes and adherence to food fads. Nutrition knowledge was positively correlated with socioeconomic status; socioeconomic status was positively related to adequacy of nutrient intake. Personal attitudes and beliefs acted as intervening variables.

- 216 Hanson, R. Galen. "CONSIDERING 'SOCIAL NUTRITION' IN ASSESSING GERIATRIC NUTRITION." Geriatrics, 33(3), Mar 1978: 49-51.

The physician needs to be sensitive to the need for social supports, and to assess the geriatric patient's social nutrition when taking a history. A prescription for social contacts at mealtimes may have great impact on the patient, renewing interest in life. This can be achieved through "Meals on Wheels" or other situations in the community to which the physician should be alert.

- 217 Heltsley, Mary E. "COPING. THE AGED IN SMALL TOWN, U. S. A" Journal of Home Economics, 68(4), Sept 1976: 46-50.

The food buying practices of 20 persons over 60 years of age living in small town in Iowa are reported. Information was obtained regarding where they shopped, transportation and assistance for shopping, use of food stamps and group meal programs, and how they coped with inflation. Recommendations include a person-to-person approach to reach the aged; accessory services such as transportation to programs for the aged; and acknowledgment in these programs of the need of the aged for self-esteem, independence, and social interaction.

- 218 Krondl, Magdalena; Lau, Daisy; Yurkiw, Mary Anne; and Coleman, Patricia. "FOOD USE AND PERCEIVED FOOD MEANINGS OF THE ELDERLY." Journal of the American Dietetic Association, 80, 1982: 523-529.

Food use frequency and food perception analyses were used to assess food use patterns of noninstitutionalized, subjectively healthy seniors, aged 65 to 77 and living alone. The majority of the sample maintained variety and nutritional balance in food selection; the women showed greater use of several items, particularly fruits and vegetables. Tea, whole wheat bread, eggs, coffee, potatoes, margarine, carrots, and orange juice ranked highest in the core food list. perceived taste and health beliefs were strong motives in food selection.



- 219 Learner, R. Max and Kivett, Vira R. "DISCRIMINATORS OF PERCEIVED DIETARY ADEQUACY AMONG THE RURAL ELDERLY" American Dietetic Association. 78(4), Apr 1981: 330-337.

A secondary analysis study using data obtained in 1976 from residents of a low income area of North Carolina examines the effects of social, economic, personal, and health variables on the extent to which older rural adults were concerned with the quality of their diet. Using multivariate statistical techniques, the following variables were found to be significant in identifying those persons with perceived dietary problems: changes in diet since age 50, perceived income adequacy, morale, and, to a lesser degree, race, self-rated health, and social satisfaction. Understanding the client's perception of and feelings about diet adequacy may facilitate intervention efforts.

- 220 Marrs, Diane C. "MILK DRINKING BY THE ELDERLY OF THREE RACES." Journal of the American Dietetic Association, 72(5), May 1978: 495-498.

A survey of 347 Texans participating in the Title VII Nutrition Program for the Elderly reveals no significant difference among Mexican-Americans, blacks, and Anglosaxons in milk consumption or in symptoms of lactose intolerance. The offering of a choice of milk (whole, skim, chocolate, buttermilk) appears to be important for acceptance. Milk was consumed by at least 85 percent of each group; thus, it is a valuable source of nutrients and should be offered to multiracial groups of elderly people.

- 221 Mason, J. Barry and Bearden, William O. "PROFILING THE SHOPPING BEHAVIOR OF ELDERLY CONSUMERS." Gerontologist, 18(5), Oct 1978: 454-461.

A representative sample of 110 metropolitan, middle-income households in which the primary food shopper averaged 66 years was interviewed. Among the elderly, shopping appears to function as a social and recreational activity. The shoppers are cost conscious in that they compare prices, use cents-off coupons, and purchase store brands. They also favor outlets offering senior citizen discounts. Although 13 percent reported food stamp eligibility, only six percent used food stamps. Compared with an all-consumer sample, less of the aged recalled unavailability of advertised food specials, and more were offered no replacement by management. Recommendations for assisting the elderly are given.

- 222 Natow, Annette and Heslin, Jo-Ann. "PSYCHOSOCIAL FORCES THAT AFFECT NUTRITION AND FOOD CHOICES." In Geriatric Nutrition. Boston: CBI Publishing Co., 1980: 1977-224.

The myriad of psychosocial forces that affect the elderly are impossible to totally describe. Factors that influence the nutritional status of the elderly include those that are of a physical (e.g., dental, arthritis, chronic disease, reduced digestive capacity), psychological (e.g., depression, anorexia, personal taste preferences), or social (e.g., financial restriction, inability to adapt to nursing homes) nature, or a combination of these. Elderly facing the greatest risk for nutritional problems are the 15 percent (3.3 million) who are economically deprived. An additional 2.2 million elderly are near poor, also falling into the low income population group. Aspects to be considered in assisting nutritional food intake for the elderly are elaborated. They cover the meaning of food; sociological factors in elderly nutrition; the use of food as a positive social factor in various types of environmental settings; consideration of the effects of mental disorders, depression, and physical disabilities; and the benefit of self-help eating devices.

- 223 Natow, Annette B. "UNDERSTANDING THE CULTURAL FOOD PRACTICES OF ELDERLY OBSERVANT JEWS." Journal of Nutrition for the Elderly, 2(1), Fall 1982: 49-52.

The Jewish dietary laws are explained and suggestions on how these practices may be adhered to with specific dietary modifications are given. An explanation of acceptable food products and consideration for institutional feeding are addressed.

- 224 Rao, D.B. "PROBLEMS OF NUTRITION IN THE AGED (SOCIOECONOMIC ASPECTS, MALNUTRITION)."

See Reference No. 28.

- 225 Rao, Dodda B. "PROBLEMS OF NUTRITION IN THE AGED."

see Reference No. 29.

- 226 Rux, Julia M. "THOUGHTS ON CULTURE, NUTRITION AND THE AGED." Journal of Nutrition for the Elderly, 1(3,4), Fall/Winter 1981: 15-19.

Culture and culturally congruent foods can affect the life of the institutionalized aged. Cultural identity, within a group and psychological factors related to positive feelings towards oneself and the group to which one belongs are important variables in retaining and regaining health through nutrition. Suggestions are made for comparative research of culturally congruent and incongruent diets.

- 227 Singleton, Nan; Kirby, Alice L.; and Overstreet, Marylu. "SNACKING PATTERNS OF ELDERLY FEMALES." Journal of Nutrition for the Elderly, 2(2), Winter 1982: 3-14.

Snacking patterns of 95 noninstitutionalized elderly females were investigated. Forty-two of the subjects snacked, and the average number of snack items consumed was two. More snacks were consumed in the evening or afternoon than in the morning. Snacks furnished a range of 5.3 percent to 30.8 percent of the mean-percentage intake of energy and 12 selected nutrients. Over one-half of the snacks consumed were nutrient dense; one-third were high in carbohydrates (especially sucrose). The nutrients supplied by snacks were not affected by age, race, or income. Place of residence, education, and frequency of grocery shopping significantly affected the intake of five nutrients. Snacking was apparently a matter of personal choice, based on established food habits.

- 228 Troll, Lillian E. "EATING AND AGING." Journal of the American Dietetic Association, 59(5), Nov 1971: 456-459.

Because eating habits are tied into what gives meaning and significance to life, it is not wise to attempt dietary intervention unless there is something definitely wrong with an older person's eating practices, and the changes are clearly an improvement. Nutrition programs for older people should aim to keep them physically, socially and psychologically alive, which means including opportunities for individual planning and choosing of both nourishing food and social involvement.

- 229 Weinberg, Jack. "PSYCHOLOGIC IMPLICATIONS OF THE NUTRITIONAL NEEDS OF THE ELDERLY." Journal of the American Dietetic Association, 60(4), Apr 1972: 293-296.

Food is needed for more than physical survival, it is needed also to maintain the psychological self. Food is a symbol for related behavior patterns and interpersonal relationships. Those who care for the aged must understand the social significance of food and the need of all persons to retain mastery and control of their lives.

## ECONOMIC FACTORS

- 230 Cohen, Cyril. "SOCIAL AND ECONOMIC FACTORS IN THE NUTRITION OF THE ELDERLY." Proceedings of the Nutrition Society, 33(1), May 1974: 51-57.

A review of the limited information from studies conducted in the area of social and economic factors affecting nutrition is followed by the findings of the first multicenter longitudinal survey in the United Kingdom. Results indicate that independent-living men over 75 are most likely to have inadequate diets and that those who have a lack of funds suffer from a monotonous diet more often than from primary subnutrition. If subnutrition does occur it is usually just one part of a multiple pathology including physical and mental illness or disability, social isolation, loneliness, or bereavement. Poor eating habits are found to be caused by either poor dietary advice, food fads, or failure to take advantage of available financial aid.

- 231 Gallo, Anthony E.; Salathe, Larry E.; and Boehm, William T. SENIOR CITIZENS: FOOD EXPENDITURE PATTERNS AND ASSISTANCE. Washington, DC: U.S. Department of Agriculture, June 1979. Agricultural Economic Report No. 426. 11 pp.

A comparison of households headed by senior citizens with households headed by persons under 65 during 1972-73 indicates that the income of the older group was approximately half that of the younger group. The elderly spent 5 percent more of their before-tax income on food. The elderly allocated a greater proportion of their food dollar to fresh fruits and vegetable" and spent more per person for food at home than did younger persons. Reports and tables of the participation levels of the elderly in food stamp and feeding programs are included.

- 232 Kohrs, M.B.; O'Hanlon, P., et al, "TITLE VII-NUTRITION PROGRAM FOR THE ELDERLY. II. RELATIONSHIP OF SOCIOECONOMIC FACTORS TO ONE DAY'S INTAKE."

See Reference No. 322.

- 233 Rao, D.B. "PROBLEMS OF NUTRITION IN THE AGED (SOCIOECONOMIC ASPECTS, MALNUTRITION)."

See Reference No. 28.

- 234 Sherman, Edith M. and Brittan, Margaret R. "CONTEMPORARY FOOD GATHERERS. A STUDY OF FOOD SHOPPING HABITS OF AN ELDERLY URBAN POPULATION." Gerontologist, 13(3), Autumn 1973, Part I: 358-364.

Two samples of persons over age 65 were interviewed in Denver. Group one consisted of 401 inner-city residents in a low- to middle-income area and group two consisted of 519 residents in an upper middle-class suburban area. Problems for both groups were transportation and relocation of stores causing great inconvenience. Added problems for group one were aloneness (shopping for one and eating alone) and lack of money for food.

#### OTHER FACTORS AFFECTING NUTRITIONAL STATUS-- DRUGS

- 235 Rest, Ethel. "NUTRIENT/DRUG INTERACTIONS AND THE ELDERLY: FOCUS ON POTASSIUM." Journal of Nutrition for the Elderly, 1(3,4), Fall/Winter 1981: 87-88.

Chronic diseases among the elderly often necessitate the use of medications which may cause potassium depletion. Selected drugs which can cause hypokalemia are listed. A table shows foods that are a good source of potassium and the amount of potassium they contain.

- 236 Dickerson, John W.T. "SOME ADVERSE EFFECTS OF DRUGS ON NUTRITION." Royal Society of Health Journal, 98(6), 1978: 261-265.

Drugs may interfere with nutrition in a variety of ways, some desirable and others undesirable. Adverse effects may result from long-term administration of a single drug or from the interaction of two drugs given simultaneously. Drugs discussed include appetite suppressants, oral contraceptives, anticonvulsants, alcohol, ascorbic acid and vitamin E in pharmacological amounts, and cytotoxic drugs. Additional drugs prescribed for the elderly are considered. The elderly are particularly vulnerable because of their decreased ability to metabolize drugs and reduced renal function, and because the effects may exacerbate an existing tendency to malnutrition.

- 237 Ibrahim, I.K.; Ritch, A.E.S.; MacLennan, W.J.; and May, T. "ARE POTASSIUM SUPPLEMENTS FOR THE ELDERLY NECESSARY?" Age and Ageing, 7(3), Aug 1978: 165-170.

Nineteen elderly patients receiving diuretics and potassium supplements for congestive cardiac failure and 13 elderly controls were evaluated for plasma and total body potassium. Comparison of the results with studies of younger subjects indicates that aging

negatively influences potassium status and that diuretics and cardiac failure have a greater negative effect on potassium status in the elderly. While no relationship was shown between potassium dosage and total body potassium status, the authors suggest it would be unwise to discontinue potassium supplements for patients on diuretics.

- 238 Lamy, Peter P. "THE FOOD/DRUG CONNECTION IN ELDERLY PATIENTS." American Pharmacy, NS18(7), July 1978: 30-31.

Interactions between diet and drugs and nutritional status are described. The elderly are particularly at risk because of greater individual variation in response to drugs, the effects of chronic disease on nutritional status, the fact that they usually take several prescribed drugs concurrently, and the possibility that they may also take self-prescribed nonprescription drugs.

#### ALCOHOL

- 239 Albanese, Anthony. "DRUGS AND NUTRIENT INTERACTIONS." In Nutrition for the Elderly. New York: A.R. Liss, 1980: 285-299.

The potential for adverse drug reactions is greater in the elderly than in younger patients. While the significance of drug-nutrient interactions is not yet fully recognized, it is now realized that an improved understanding of the underlying mechanisms of these interactions may prove invaluable in disease and malnutrition therapy. Aspects of drug pharmacokinetics associated with body distribution and elimination are discussed briefly, followed by separate discussions of drug actions and drug-nutrient interactions for a variety of drug classes. These include salicylates (e.g., aspirin), antacids; iron supplements; corticosteroids; antibiotics; laxatives; alcohol; anorexic agents; and anticonvulsant drugs. Drugs that interfere with nutrient utilization are tabulated.

- 240 Barnes, Grace M. "ALCOHOL USE AMONG OLDER PERSONS: FINDINGS FROM A WESTERN NEW YORK STATE GENERAL POPULATION SURVEY." Journal of the American Geriatrics Society, 27(6), June 1979: 244-250.

A survey of the drinking patterns of older persons as compared to younger age groups reveals lower rates of use, heavy drinking and alcohol-related problems in persons aged 60 or older. Considerably more older men than older women drink heavily. The stress of widowhood and retirement do not seem to be related to greater problem drinking.



## DIETARY SUPPLEMENTATION

- 241 Marsh, Alice G.; Sanchez, Tom V.; Mickelsen, Olaf; Keiser, Joan; and Mayor, Gilbert. CORTICAL BONE DENSITY OF ADULT LACTO-OVO-VEGETARIAN AND OMNIVOROUS WOMEN." Journal of the American Dietetic Association, 76(2), Feb 1980: 148-151.

The protein, calcium, and phosphorus content of vegetarian and nonvegetarian diets differ substantially. It has been suggested in early studies that these differences could lead to differences in bone mineral mass. However, a recent study of 200 lacto-ovo-vegetarians had lower bone mineral mass than their omnivorous counterparts. In both groups, milk was the most common source of calcium, so no conclusion can be drawn from calcium consumption.

- 242 Read, Marsha H. "FOOD SUPPLEMENT USAGE BY THE ELDERLY." Journal of the American Dietetic Association, 80(3), Mar 1982: 250-253.

A variety of food supplements were taken by 66 percent of 170 elderly (109 females) participants in the Title VII Care and Share Meal Program. The participants were predominantly caucasian (91 percent), of good health or average health (58 percent and 31 percent, respectively). Of supplements selected, ascorbic acid and vitamin E were the most popular choices. Some supplements may have improved nutritional status, while others were probably inappropriate or unnecessary. The findings indicate that the elderly have a number of erroneous beliefs concerning the efficacy of food supplements. Often, reasons given for supplementation were inappropriate, and unreliable information sources were cited. Relatively significant amounts of money were spent on food supplements on limited personal incomes. It was concluded that nutrition education is needed to teach the elderly the relationships between adequate diet and good health, and appropriate versus inappropriate food supplement intakes.

- 243 Schorah, Christopher. "THE EFFECT OF VITAMIN C SUPPLEMENTS ON BODY WEIGHT, SERUM PROTEINS, AND GENERAL HEALTH OF AN ELDERLY POPULATION." American Journal of Clinical Nutrition, 34(5), May 1981: 871-876.

Vitamin C supplements (1 g/day) taken by institutionalized elderly patients during a 2 month double-blind trial significantly raised initially low plasma and leukocyte vitamin C levels, as compared with

patients receiving placebo. Small increases were also observed in body weight, plasma albumin, and pre-albumin of supplemented patients but not placebo subjects. Other therapeutic benefits included reduction in purpura and skin hemorrhage in patients receiving vitamin C; vitamin therapy had no effect on mood or mobility in this population.

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## V. Nutrition-Related Diseases



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## GENERAL

- 244 Durnin, J.V.G.A. "NUTRITION." In Textbook of Geriatric Medicine and Gerontology, 2nd ed., edited by J.C. Brocklehurst. Edinburgh: Churchill Livingstone, 1978: 417-432.

- 245 Kohrs, Mary Bess. "A RATIONAL DIET FOR THE ELDERLY."

See Reference No. 16.

- 246 Natow, Annette and Heslin, Jo-Ann. "NUTRITION AND HEALTH PROBLEMS." In Geriatric Nutrition. Boston: CBI Publishing Co., 1980.

The nutritional implications of various chronic health diseases common to the elderly are individually discussed. The diseases covered include: cardiovascular disease; hypertension (high blood pressure); maldigestion and malabsorption associated with the gastrointestinal tract; cancer (including colon cancer); malnutrition (undernutrition and obesity); diabetes; anemia, as related to iron, folic acid, and vitamin B12 intakes; arthritis, Parkinson's disease; and decubitus ulcers (bed sores) and their incidence relative to protein, vitamin, and mineral intakes. About 72 percent of people aged 45 through 64 have one or more of such chronic health problems. At age 65 and over, chronic illness incidence increases to 86 percent, with many elderly people having several chronic impairments, and about 50 percent of the elderly over age 65 reporting some limitation of normal activity due to chronic health problems.

- 247 Reichel, William, ed. CLINICAL ASPECTS OF AGING.

See Reference No. 30.

- 248 Schafer, S. "MALNUTRITION IN THE AGED." Dental Hygiene, 54(4), May 1980: 233-236.

To aid a health professional in adequately completing a health history, brief descriptions of the clinical manifestations of deficiencies of protein; calcium; iron; magnesium; vitamins A, B-1, B-2, B-12, C, D; niacin; and folic acid are listed. Socioeconomic and physiological factors contributing to dietary deficiencies are described and can combine to cause tooth loss, atrophy of the jaw, periodontal disease, ill-fitting dentures, decrease in saliva, loss of taste buds, and mucosal lesions.

- 249 "SYMPOSIUM. REPORT OF THE TASK FORCE ON THE EVIDENCE RELATING SIX DIETARY FACTORS TO THE NATION'S HEALTH." American Journal of Clinical Nutrition, 32(12 Suppl), Dec 1979: 2621-2748.

In 1978, the American Society for Clinical Nutrition convened a panel of scientists to examine all available evidence on six key dietary issues related to diseases prevalent in the Western World. This publication presents consensus statements, followed by background reviews, for the role of cholesterol in atherogenesis; dietary fat in atherogenesis; carbohydrate and sucrose in atherosclerotic heart disease, diabetes mellitus and dental caries; excess calories (obesity) in health and longevity; alcohol in liver disease and atherosclerosis; and sodium in hypertension. While not directly related to aging, the information in these articles is useful for long-range dietary planning.

- 250 Weg, Ruth B. "PROLONGED MILD NUTRITIONAL DEFICIENCIES: SIGNIFICANCE FOR HEALTH MAINTENANCE." Journal of Nutrition for the Elderly, 1(1), Spring 1980: 3-22.

There is increasing evidence of the apparent existence of widespread subacute or subclinical malnutrition among persons 55 and over. Symptomology consequent to this malnourished state frequently is assigned to aging, or associated with nonnutritional organic pathology. Changing nutritional habits may hold promise for the delay, prevention, and/or reversal of a number of chronic disease characteristics of later years. Suggestions are made for the development and implementation of appropriate nutrition and nutrition education.

#### ENERGY IMBALANCE

- 251 Templeton, Carolyn L.; Petty, Beryl J.; and Harter, Judith. "WEIGHT CONTROL - A GROUP APPROACH FOR ARTHRITIS CLIENTS." Journal of Nutrition Education, 10(1), Jan/Mar 1978: 33-35.

The design of an ongoing weight control group by the University of Michigan's Pilot Geriatric Arthritis Program (PGAP) is presented. The most important factors contributing to the success of the community-based group are member involvement and leadership, information sharing and positive reinforcement of established goals.

## OBESITY

- 252 Andres, R. "INFLUENCE OF OBESITY ON LONGEVITY IN THE AGED." Advances in Pathobiology, 7, 1980: 238-246.

Literature concerning the impact of obesity at different ages on overall mortality is critically examined and reviewed. The review led to conclusions which are strongly at variance with commonly held perceptions that lean body weight decreases mortality at all ages and that body weights given in commonly used weight/height tables are applicable for middle-aged and elderly adults. Studies indicate that ideal weight for these age groups is considerably higher than recommended tabulated values. The findings of six major epidemiological studies are examined. The absence of striking effects of obesity on mortality was noted. These findings indicate the need for substantial additional research to clarify these controversies.

- 253 Jeffay, Henry. "OBESITY AND AGING." American Journal of Clinical Nutrition, 36(4 Suppl), Oct 1982: 809-811.

While it is clear that obesity should be prevented, there is less agreement about proper approaches to use with elderly people who are or have been obese for many years. Obesity is defined as meeting one of the following criteria: over 20 percent ideal body weight; a ponderal index (height (H) divided by weight (W), with W to the one-third power) greater than 12.2; triceps skinfold at or above 23 and 30 mm for males and females, respectively; or W/H squared at or above 27. Evidence for suggesting that diet increases human longevity is circumstantial at best, but animal experiments have shown that (but still adequate) diets increase life span. There is a natural human tendency to increase body weight and percent body fat with age. Excessive fat accumulation (obesity) probably predisposed rather than causes an association with a number of diseases (hypertension, vascular and heart disease, diabetes). Reducing body weight will reduce harmful effects of these diseases. The best weight for disease prevention and longevity appears to be slightly greater than one's ideal body weight.

- 254 Malvestuto, P. "OBESITY AND HEALTH IN THE ELDERLY." Journal of Nutrition for the Elderly, 1(1), Spring 1980: 91-100.

A survey of 169 biracial participants of the Alabama Nutrition Program for the Elderly was conducted to establish the frequency of obesity in race and sex groups, and to examine the relationship of obesity to social and physical well-being. Physical health parameters measured included frequency of chronic disease, days sick per month, functional capacity, and self-perceived participation and activity level. Analysis of the data revealed that significantly more women than men



were obese. A significant positive relationship was found between hypertension and obesity in white women. Neither functional capacity nor days sick per month were significantly correlative with obesity. Self-perceived health among black men was inversely correlated with increased weight status. Correlations between social variables and obesity were found only in the area of activity, which was correlated with obesity for white women and black men.

- 255 Price, J.W. and Pritts, C. "OVERWEIGHT AND OBESITY IN THE ELDERLY." Journal of Gerontology Nursing, 6(6), June 1980: 341-347.

Information reports on overweight and obesity in the elderly are reviewed and evaluated. These two extremes are chronic diseases, representing major problems for the United States in the elderly and the young alike. Psychological and social factors are interwoven in the etiology, maintenance, and treatment of elderly obesity. It can be concluded that obesity appears to be greatly involved in the way obese persons live and their lifestyle. Hence, obesity prevention requires changes in social and economic factors that give rise to such lifestyles. Five approaches are identified to aid in initiating such a change. These include the use of direct behavioral approaches, industrial development of palatable low-calorie foods, provision of low-calorie dishes by restaurants and the foodservice industry, health club participation, and insurance premium reduction incentives for individuals maintaining optimum health. While some of these approaches have been used, their practice needs to be expanded.

#### UNDERNUTRITION

- 256 Fernandez, Judy. "UNDERNUTRITION AMONG THE ELDERLY." Journal of Nutrition for the Elderly, 1(3,4), Fall/Winter 1981: 79-86.

Physiological changes associated with aging can lead to undernutrition in the elderly. Other contributing factors include anorexia due to chronic disease and depression, special diets which require major dietary changes, impaired nutrient absorption, stress, inability to prepare meals, chronic pain, drugs, and institutionalization. Recommendations for improving nutritional status are presented.

- 257 Gambert, Steven R. and Guansing, Alejandro R. "PROTEIN-CALORIE MALNUTRITION IN THE ELDERLY." Journal of the American Geriatrics Society, 28(6), June 1980: 272-275.

Intermediate forms of protein-calorie malnutrition (PCM) are common and often unrecognized in the elderly. The etiology is traced through

socioeconomic problems, abnormalities of intake, and physiological dysfunction. Methods of nutritional assessment, including tables of physical signs of, and screening tests for PCM are included. The controversial protein requirement is discussed.

## CARDIOVASCULAR DISEASE

- 258 Horsey, Jennifer. "ISCHAEMIC HEART DISEASE AND AGED PATIENTS: EFFECTS OF ASCORBIC ACID ON LIPOPROTEINS." Journal of Human Nutrition, 35(1), Feb 1981: 53-58.

The relationship of ascorbic acid to lipoprotein levels in elderly patients was investigated in 12 women and 13 men; 5 of the women and 6 of the men had clinical history of ischaemic heart disease (IHD), confirmed by ECG. Fasting levels of cholesterol and triglycerides in serum and lipoprotein fractions and white blood cell ascorbic acid were determined; analyses were repeated after 6 weeks, during which each patient took 1 gram of ascorbic acid daily. Initial levels of ascorbic acid were depleted in 15 patients; in men, these levels correlated positively with HDL cholesterol. After 6 weeks, HDL cholesterol had increased in all men and women with IHD. Results indicated that ascorbic acid deficiency may aggravate disorders of lipoprotein deficiency and could be eliminated as a possible risk factor in IHD.

- 259 Wenger, Nanette, K. "GUIDELINES FOR DIETARY MANAGEMENT AFTER MYOCARDIAL INFARCTION." Geriatrics, 34(8), Aug 1979: 75-83.

In the first hours after myocardial infarction, food and oral fluids should be withheld. The insulin dependent diabetic, however, should have the diet regulated to maintain a trace to +1 urinary sugar. After several hours, a 2-gram sodium liquid or a soft diet may be offered in small frequent feedings in order to minimize oxygen demand of digestion. A baseline dietary assessment should be done and the atherosclerotic process and rationale for dietary modification explained to the patient. The American Heart Association's "Prudent Diet" is recommended and is included. Individualization of the diet and involvement of family members who prepare food are important.

## ATHEROSCLEROSIS

- 260 Korcok, M. "PRITIKIN VS. AHA DIET: NO DIFFERENCE FOR PERIPHERAL VASCULAR DISEASE." Journal of the American Medical Association, 246(17), Oct 1981: 1871.

An investigation of claims that the high-fiber, low-fat Pritikin diet has a beneficial effect on peripheral vascular disease was undertaken with 50 patients suffering claudication and atheroma. Each subject was assigned to either the Pritikin or the American Heart Association's diet and was given intensive food preparation training; subjects were urged to exercise 45 minutes a day and to restrict alcohol, coffee, salt consumption, and cigarette use. Vascular assessments were made at 2-month intervals for 1 year; actual nutrient intakes were assessed monthly. The Pritikin group consumed half the fat and cholesterol, 67 percent more fiber, 14 percent more carbohydrate, and the same amount of protein as the AHA group. Treadmill walking was improved in both groups. No significant differences were found for lipid changes, and no improvements were noted for blood flow in the limbs of either group.

- 261 Vavrik, M.; Priddle, W.W.; and Liu, S.F. "SERUM CHOLESTEROL CONCENTRATION AND ATHEROSCLEROTIC CARDIOVASCULAR DISEASE IN THE AGED."

See Reference No. 122.

#### DIABETES MELLITUS AND RELATED DISEASES

- 262 Davidson, Mayer B. "THE EFFECT OF AGING ON CARBOHYDRATE METABOLISM: A REVIEW OF THE ENGLISH LITERATURE AND A PRACTICAL APPROACH TO THE DIAGNOSIS OF DIABETES MELLITUS IN THE ELDERLY." Metabolism, 28(6), June 1979: 688-705.

Up to 50 percent of persons over 60 years have abnormal glucose tolerance tests. The explanation may be fivefold: poor diet, physical inactivity, decreased lean body mass in which to store the carbohydrate load, decreased insulin secretion, and insulin antagonism (evidence is strongest for the last). The author recommends diagnosing diabetes mellitus only when fasting hyperglycemia is present.

- 263 DIABETES AND AGING. Bethesda, MD: National Diabetes Information Clearinghouse, 1980. 17 pp.

Information resources on diabetes in older people for patients, the public and the professional, cover nutritional concerns, diet management, complications, psychosocial factors, medication, and food and eye problems. Nonevaluative descriptions of the material available include information on surveys, research, treatment,

treatment techniques, case histories, and physiological aspects of aging.

- 264 Grobin, Wulf. "PROGRESSIVE DETERIORATION OF GLUCOSE TOLERANCE IN THE AGED." Journal of the American Geriatrics Society, 23(1), Jan 1975: 31-37.

The results of long-term followup studies of glucose tolerance in residents of a Jewish home for the aged indicate that deterioration of glucose tolerance can be checked and even reversed by dietary means. A diabetes-oriented diet, moderately restricted in calories and low in sugar is recommended in all homes for the aged.

- 265 Horwitz, David L. "DIABETES AND AGING." American Journal of Clinical Nutrition, 36(4), Oct 1982: 803-808.

While diabetes mellitus (DM) may initially appear at any age, incidence rates rise from less than 0.2 percent in children to almost 2 percent in adults in their sixties. It is estimated that 16.5 percent of persons aged 65 and 26 percent of persons aged 85 have DM. Aging effects on carbohydrate metabolism and the diagnosis and treatment of DM in the elderly are examined. Evidence now exists which indicates that diet, physical activity, changes in lean body mass, altered insulin secretion and insulin resistance may be factors leading to impaired glucose tolerance (IGT) in the aged. No one factor alone, however, seems entirely responsible, and the relative importance of any of these in a given individual may be quite variable. Persons with IGT (from proper interpretation of the oral glucose tolerance test and other factors) and those with DM should attempt to reduce cardiovascular risk by weight control (if obese), smoking cessation, proper exercise, and reduction of elevated serum cholesterol. Therapy principles developed from treatment of younger patients may need modification for use with the elderly. Similarly, standards for DM diagnosis must be carefully applied.

- 266 Kimmerling, George; Javorski, W. Curtis; and Reaven, Gerald M. "AGING AND INSULIN RESISTANCE IN A GROUP OF NONOBESSE MALE VOLUNTEERS." Journal of the American Geriatrics Society, 25(8), Aug 1977: 349-353.

In contrast to several previous studies, neither a decrease of glucose tolerance nor insulin sensitivity could be demonstrated in a group of nonobese males aged 22 to 69. The authors suggest that decreased glucose tolerance and development of insulin resistance currently attributed to aging may instead be a function of increasing body weight often associated with the process.

## GASTROINTESTINAL DISEASES

- 267 Berman, Phillip M. and Kirsner, Joseph B. "THE AGING GUT. I. DISEASES OF THE ESOPHAGUS, SMALL INTESTINE, AND APPENDIX."

See Reference No. 184.

- 268 Johnson, Carolyn K.; Kolasa, Kathryn; Chenoweth, Wanda; and Bennink, Maurice. "HEALTH, LAXATION, AND FOOD HABIT INFLUENCES ON FIBER INTAKE OF OLDER WOMEN." Journal of the American Dietetic Association, 77(5), Nov 1980: 551-557.

Estimated fiber content and related factors of the diets of 59 older women were investigated by dietary history and questions about functional health and laxation. Fiber intakes varied from 3 to 33 g per day, with a mean of 14. In most of the women, this was adequate for normal laxation, although the ones who used laxatives regularly had intakes below 12 g per day. Factors limiting dietary fiber intakes were food preferences and poor health.

- 269 Rorick, Marvin H. and Scrimshaw, Nevin S. "COMPARATIVE TOLERANCE OF ELDERLY FROM DIFFERING ETHNIC BACKGROUNDS TO LACTOSE-CONTAINING AND LACTOSE-FREE DAIRY DRINKS: A DOUBLE BLIND STUDY." Journal of Gerontology, 34(2), Mar 1979: 191-196.

Eighty-seven subjects (mean age 77) of varying ethnic backgrounds were given, with lunch, 1 cup of chocolate dairy drink twice in 1 week, once with lactose the other time without lactose. Breath hydrogen analysis identified 23 malabsorbers, of whom 7 reported symptoms--5 after both drinks and 2 after the lactose-free drink. Of the absorbers, 14 reported symptoms. Thus, it appeared that factors other than lactose malabsorption, perhaps psychosomatic in origin, caused the symptoms of intolerance.

## DIVERTICULOSIS AND ULCERS

- 270 Almy, T.P. and Howell, D.A. "DIVERTICULAR DISEASE OF THE COLON." New England Journal of Medicine, 302(6), Feb 7, 1980: 324-331.

The probable risk for the elderly developing diverticula is nearly 50 percent. The authors discuss prevalence, symptomatic history, pathogenesis, problems in diagnosis and treatment. High-fiber diets relieve the pain and bowel dysfunction of diverticula. However,

trials with such diets have usually lacked controls and replication is needed.

- 271 Berman, Phillip M. and Kirsner, Joseph R. "THE AGING GUT: II. DISEASES OF THE COLON, PANCREAS, LIVER, AND GALLBLADDER, FUNCTIONAL BOWEL DISEASE, AND IATROGENIC DISEASE."

See Reference No. 185.

## CANCER

- 272 Ching, N.; Grossi, C.; Zurawinsky, W.; Jham, G.; Angers, J.; Mills, C.; and Nealon, T.F. "NUTRITIONAL DEFICIENCIES AND NUTRITIONAL SUPPORT THERAPY IN GERIATRIC CANCER PATIENTS." Journal of the American Geriatrics Society, 27(11), Nov 1979: 491-494.

Although cancer patients over 60 exhibit the same nutritional deficits as younger cancer patients and require the same nutritional support, they need more careful monitoring and encouragement. An evaluation of 45 patients who received intensive nutritional therapy in addition to primary surgical, chemical, or radiation therapy indicates serum albumin levels are best preserved with adequate amounts of a regular diet with or without addition of a special low residue liquid supplement. Total parenteral nutrition should be reserved for more acute phases of care.

## ANEMIA

- 273 Adler, Solomon S. "ANEMIA IN THE AGED: CAUSES AND CONSIDERATIONS." Geriatrics, 35, 1980: 49-59.

Anemia in the elderly is most often induced by an underlying pathological condition. In addition to primary marrow disorders, neglect, dementia, gastrointestinal surgical intervention, and many body system disorders can produce impaired red cell production or decreased cell survival. Borderline or mild anemias require a workup with complete blood cell counts. The reticulocyte count is especially useful in measuring the effectiveness of erythropoiesis and the response of the bone marrow to the anemia. Several other tests are suggested and their limitations discussed. Certain tests are suggested to provide specific information (e.g, bone marrow aspirations indicate iron stores; serum ferritin level determinations may obviate bone marrow examinations).



- 274 Gershoff, S.N.; Brusis, O.A., et al., "STUDIES OF THE ELDERLY IN BOSTON.  
I. THE EFFECTS OF IRON FORTIFICATION ON MODERATELY ANEMIC PEOPLE."

See Reference No. 135.

- 275 Harant, Z. and Goldberger, J.V. "TREATMENT OF ANEMIA IN THE AGED: A  
COMMON PROBLEM AND CHALLENGE." Journal of the American Geriatrics  
Society, 23(3), Mar 1975: 127-131.

Records of 484 patients surveyed reveal that 31 percent are anemic primarily due to iron deficiency. The authors categorize anemic geriatric patients into three groups according to general condition and response to treatment. One-fourth of patients respond well to iron therapy, but the most common problem is in giving iron therapy for treatment of anemia in chronic disorders. The course and general state of the patient are often more significant than lab results in a decision about therapy.

- 276 Kalchthaler, Thomas and Tan, M. Eunice Rigor. "ANEMIA IN  
INSTITUTIONALIZED ELDERLY PATIENTS." Journal of the American  
Geriatrics Society, 28(3), Mar 1980: 108-113.

Incidence of treatable anemia is found to be high (40 percent) in institutionalized elderly, particularly women over 70 and men over 90. Cause is usually surgical blood loss, gastrointestinal bleeding, or anticoagulant therapy, and diagnosis can be made without invasive procedures. Mortality is found to be related more to the underlying disease process than to the presence or absence of anemia.

- 277 Lynch, Sean R. "IRON STATUS OF ELDERLY AMERICANS."

See Reference No. 98.

- 278 Marx, J.J.M. "NORMAL IRON ABSORPTION AND DECREASED RED CELL IRON UPTAKE  
IN THE AGED."

See Reference No. 169

- 279 Nordstrom, James W. "ANEMIA AMONG NON-INSTITUTIONALIZED WHITE ELDERLY"  
Nutrition Reports International, 25(1), Jan 1982: 97-105.

Elderly subjects (97 males and 223 females: aged 59-99), randomly selected from the Title VII Nutrition Program for Elderly in Central Missouri participated in a 1975 nutrition survey. Blood levels of hematocrit, hemoglobin, and serum iron were analyzed. Participation in the program was not related to the hematocrit or hemoglobin concentrations, or to the dietary intake of iron (based on 1 day food records). Among males and females, 3 and 16 percent, respectively, consumed less than 67 percent of the RDA for iron. Among males, 52, 20, and 8 percent had low blood values for hematocrit (below 44 percent), hemoglobin (below 14 g/100 ml), and serum iron (below 60 micrograms/100 ml), respectively. Among females, 10, 9, and 5 percent had low values for hematocrit (below 37 percent), hemoglobin (below 12.0 g/100 ml) and serum iron (below 40 micrograms/100 ml), respectively. Five percent of the males and 9 percent of the females had low values for mean cell hemoglobin concentration (less than 33 percent).

- 280 Walsh, John R.; Cassel, Christine K.; and Madler, Jerome J. "IRON DEFICIENCY IN THE ELDERLY: IT'S OFTEN NONDIETARY." Geriatrics, 36, Jan-Mar 1981: 121-132.

Differential diagnosis of iron deficiency anemia and anemia of chronic disease is necessary for successful management of the condition. In the elderly, anemia is most often caused by chronic blood loss from gastrointestinal lesions. Therefore, stool tests for occult blood loss are essential. While hypochromia, low reticulocyte index, hypoferrinemia, and elevated protoporphyrin level may be indicative of either type of anemia, specific diagnosis is aided by bone marrow examinations, free erythrocyte protoporphyrin measurements, and especially serum ferritin assays. Treatment modalities for iron deficiency anemia include oral administration of 150-250 mg of elemental iron daily or parenteral (intramuscular, intravenous) iron dextran. Oral therapy should be continued for 3 to 4 months after the anemia is corrected to provide adequate stores against recurrence.

## OSTEOPOROSIS

- 281 Albanese, Anthony A. "OSTEOPOROSIS." Contemporary Nutrition, 2(2), June 1977: 1 sheet, unnumbered.

Bone formation, diseases of bone loss, and the characteristics of bone loss are discussed relative to osteoporosis in the elderly. Mature skeletal and alveolar bones are comprised of about 90 percent fibrous collagen protein, with the remainder being mostly calcium (Ca) and phosphorus (P). Of these elements, 99 percent of Ca and 80-90 percent of P are in the bones and teeth. Body Ca accumulation depends entirely on an adequate dietary supply of Ca and protein, the body's ability to use the dietary supply of Ca and protein, and the body's ability to use these efficiently. Osteoporosis is recognized as a decrease in total bone mass without change in chemical composition ratios, and appears to be the major form of bone loss of postmenopausal and the elderly U.S. women. Various causes of bone loss are cited and discussed. Quantitative radiographic measurements point to the likely adverse bone health effects of low Ca intake, and illustrate the preventive value of diets providing 1,000 mg/day of Ca.

- 282 Albanese, Anthony A.; Lorenze, Edward J. Jr.; Edelson, A. Herbert; Wein, Evelyn H.; Carroll, Lynne. "EFFECTS OF CALCIUM SUPPLEMENTS AND ESTROGEN REPLACEMENT THERAPY ON BONE LOSS OF POSTMENOPAUSAL WOMEN." Nutrition Reports International, 24(2), Aug 1981: 403-414.

Phalanx 5-2 radiodensitometry of some 4,000 "healthy normal" females (20-78 years of age) has shown that optimal bone density in women is attained at about age 40 and declines rapidly thereafter. Correlation of dietary data and phalanx 5-2 density measurements with fracture incidence in 313 women over 35 years of age demonstrated that fracture risk is closely associated with subnormal bone density and habitual calcium consumption of 50 percent or less than the RDA of 800 mg/day; approximately 1,000 mg/day are necessary to achieve optimal bone density in postmenopausal women.

- 283 Exton-Smith, A.N. "BONE AGING AND METABOLIC BONE DISEASE." In Textbook of Geriatric Medicine and Gerontology, 2nd ed., edited by J.C. Brocklehurst. Edinburgh: Churchill Livingstone, 1978: 510-523.
- 284 Garn, Stanley. "CALCIUM INTAKE AND BONE QUALITY IN THE ELDERLY." Ecology of Food and Nutrition, 10(3), Feb 1981: 131-133.

Information on calcium intake and skeletal mass of 1,435 blacks and whites of both sexes, aged 60 and above was derived from the Ten-State

Nutrition Survey of 1972. Results of data analysis revealed that there is at best a low order, barely significant relationship between daily calcium intake (mg/day) and metacarpal cortical area (CA) prior to partialling for caloric intake. This finding does not support the assumption that adult bone loss is a product of low or inadequate intake of calcium.

- 285 Jowsey, Jenifer. OSTEOPOROSIS - DIETARY FACTORS AND ETIOLOGY. Chicago, IL: American Dietetic Association, 1979. Audiocassette series (ACS) 2-79, with study guide.

Dr. Jenifer Jowsey discusses whether daily calcium intake prevents bone loss disease.

Can be obtained from the American Dietetic Association, 430 North Michigan Avenue, Chicago, IL 60611.

- 286 Jowsey, Jenifer. "OSTEOPOROSIS. ITS NATURE AND THE ROLE OF DIET." Postgraduate Medicine, 60(2), Aug 1976: 75-79.

Dietary constituents involved in the development of osteoporosis include nitrogen, fluoride, vitamin D, calcium, and phosphorus. A high phosphorus to calcium ratio may be the most important factor. Because American diets are so high in phosphate, calcium supplements from age 25 are recommended to prevent bone loss.

- 287 Lee, C.J. "EFFECTS OF SUPPLEMENTATION OF THE DIETS WITH CALCIUM AND CALCIUM-RICH FOODS ON BONE DENSITY OF ELDERLY FEMALES WITH OSTEOPOROSIS." American Journal of Clinical Nutrition, 34(5), May 1981: 819-823.

Mean bone density of 20 elderly female patients with osteoporosis (mean age 70 years) increased with calcium supplementation of their diets. Patients' daily calcium intake was increased by adding processed cheese and dicalcium phosphate plus vitamin D capsules to the diet over a 6-month period. Although serum calcium, phosphorus, and alkaline phosphatase, as well as urinary calcium:creatinine and phosphorus:creatinine, were unchanged, 11 patients exhibited increased bone density.

- 288 Lender, M.; Verner, E.; Stankiewicz, H.; and Menczel, J. "INTESTINAL ABSORPTION OF CA-47 IN ELDERLY PATIENTS WITH OSTEOPOROSIS, PAGET'S

DISEASE AND OSTEOMALACIA. EFFECTS OF CALCITONIN, OESTROGEN AND VITAMIN D-2." Gerontology, 23(1), 1977: 31-36.

Calcium absorption is less in the elderly than in younger persons. Estrogen treatment increases calcium absorption in patients with osteoporosis. Calcitonin exerts two effects, depressing calcium absorption at first hours of study but increasing absorption in the second and third hours. Administration of vitamin D also is shown to increase calcium absorption.

- 289 Marsh, Alice G. "CORTICAL BONE DENSITY OF ADULT LACTO-OVO-VEGETARIAN AND OMNIVOROUS WOMEN."

See Reference No. 241.

- 290 Parfitt, Michael A.; Chir, B.; et, al. "VITAMIN D AND BONE HEALTH IN THE ELDERLY."

See Reference No. 177.

- 291 Pittet, P.G.; Davie, M.; and Lawson, D.E.M. "ROLE OF NUTRITION IN THE DEVELOPMENT OF OSTEOMALACIA IN THE ELDERLY." Nutrition and Metabolism, 23(2), 1979: 109-116.

Vitamin D intake and time spent outdoors were estimated in 15 elderly persons with partial gastrectomy who had developed osteomalacia and in seven controls who had not developed osteomalacia. It was concluded that sunlight is more important for vitamin D supply than is diet, and that reluctance to go outdoors may be the original cause of osteomalacia.

- 292 Sandler, Rivka Black. "ETIOLOGY OF PRIMARY OSTEOPOROSIS: AN HYPOTHESIS." Journal of the American Geriatrics Society, 26(5), Apr 1978: 209-213.

Primary osteoporosis, beginning in the middle of the fourth decade, is considered a universal phenomenon. The complex dependencies of bone metabolism on major organ systems imply a multifactorial etiology. Age-related declines in these organ systems may indicate that bone loss occurs as a secondary result of prolonged suboptimal bone remodeling. Dietary treatment includes administration of fluoride plus increasing calcium and vitamin D, and maintaining a phosphate to

calcium ratio of 1 by using calcium supplements from age 25. Other treatment modalities discussed include estrogen replacement and physical activity.

- 293 Skillman, Thomas G. "CAN OSTEOPOROSIS BE PREVENTED?" Geriatrics, 35(2), Feb 1980: 95-102.

The nature of osteoporosis is explained as a condition of accelerated resorption as compared to formation of bone. Identifying clinical characteristics are described. Estrogen deficiency, dietary calcium deficiency, parathyroid hormone secretion, and the aging process are implicated in pathogenesis. Recommendations for treatment with estrogen, and/or oral calcium, vitamin D, and fluoride are presented.

- 294 Yen, Peggy K. "NUTRITION: FRACTURES AND DIET--WHAT'S THE RELATIONSHIP?" Geriatric Nursing (New York), 2(5), Sept-Oct 1981: 327, 378.

Osteoporosis, predisposing the aging (especially postmenopausal women) to hip, wrist and vertebral fractures, results from multiple interacting causes, including deficiencies of calcium, phosphorus, and vitamin D; immobilization and decreased levels of parathyroid hormone, calcitonin, and estrogens. Treatment modalities recommend the elderly consume 800 mg of calcium/day or comparable supplements if dairy products are not tolerated, adequate sunshine exposure or vitamin D supplementation, and maintenance of physical activity. Estrogen therapy is probably effective only in combination with dietary and other health measures.

#### OTHER DISEASES

- 295 Mitra, M.L. "CONFUSIONAL STATES IN RELATION TO VITAMIN DEFICIENCIES IN THE ELDERLY." Journal of the American Geriatrics Society, 19(6), June 1971: 536-545.

Twenty-eight case abstracts illustrate concurrent incidences of thiamin/vitamin B complex and vitamin C deficiencies and confusional states of the elderly. The pyruvate metabolism test and levels of ascorbic acid in the leukocyte layer of the blood were the biochemical indicators of deficiency. The confusional states were usually improved or alleviated by vitamin therapy.



- 296 Phair, J.P. "AGING AND INFECTION: A REVIEW." Journal of Chronic Diseases, 32(7), 1979: 535-540.

Many physiologic functions change with age, but there is no specific biochemical or physiologic measurement to indicate overall functional capacity in the aged. Response to infection is depressed in the aged; however, the alteration is minimal in healthy persons and more pronounced in those with acute and chronic disease. Response to therapy is slower, and side effects and toxicity of antimicrobial agents may be increased due to reduction in renal clearance.

- 297 Skalka, Harold W.; Prchal, Josef T. "CATARACTS AND RIBOFLAVIN DEFICIENCY." American Journal of Clinical Nutrition, 34(5), May 1981: 861-863.

Although reduced glutathione is thought to protect the lens of the eye from damage leading to opacification, riboflavin deficiency was not associated with early cataract formation in a clinical study of 173 cataract patients and young and elderly patients with clear lenses. Riboflavin is a precursor of the coenzyme for the enzyme which reduces glutathione. However, results did not confirm a hypothesis linking riboflavin deficiency to cataract formation in presenile patients, despite the finding that 34 percent of older cataract patients were riboflavin-deficient and that no evidence of deficiency was seen in older patients with clear lenses.

- 298 Thomson, William E. "GERIATRIC MENTAL FUNCTION AND SERUM FOLATE: A REVIEW AND SURVEY." Southern Medical Journal, 70(8), 1977: 919-922.

Literature data concerning folic acid biochemistry are assessed. These data have indicated a relationship between serum folate (SF) levels and mental acuity associated with aging. The fasting SF levels of two groups of elderly subjects were compared after excluding the influence of drugs, alcohol intake, and gastrointestinal disease. Results showed that elderly with sound dietary habits and good mental acuity did not have lowered SF levels. Hence, this finding is inconsistent with reports suggesting that SF normally decreases with age. It also was found that 35 percent of similarly aged subjects having both mental dysfunction and poor dietary habits had lowered SF levels.

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## VI. Legislation, Hearings and Related Literature



299 FINAL REPORT. THE 1981 WHITE HOUSE CONFERENCE ON AGING. (Washington, DC),  
The Conference, 1981: 3 vol.

300 FINAL REPORT. THE 1971 WHITE HOUSE CONFERENCE ON AGING. (Washington, DC),  
The Conference, 1971.

301 Greene, Joncier M. "COORDINATION OF OLDER AMERICANS ACT PROGRAMS."  
Journal of the American Dietetic Association, 78(6), June 1981:  
617-620.

The 1978 amendments to the Older Americans Act consolidate the social services, multipurpose senior centers, and nutrition programs under title III with the intent of strengthening resources and coordinating these programs. The Administration on Aging is encouraging involvement of other Federal agencies, organizations, and individuals through advisory councils, volunteer support, and a White House Conference on Aging. The Administration also is involved in the coordination of existing and proposed projects, such as a congregate housing services program for the elderly and handicapped, housing and services for rural elderly, health and social services, peer counseling in nutrition education, and research on food delivery systems.

302 1981 WHITE HOUSE CONFERENCE ON AGING: REPORT OF THE TECHNICAL COMMITTEE ON HEALTH MAINTENANCE AND HEALTH PROMOTION. Washington, DC: Government Printing Office, 1981. 88 pp. (G.P.O. Stock No. 720-019/6894).

303 OLDER AMERICANS ACT OF 1965, AS AMENDED. HISTORY AND RELATED ACTS.  
Washington, DC: Administration on Aging, U.S. Department of Health, Education and Welfare, 1979. 173 pp. (DHEW Publication No. (OHDS) 79-20170).

Titles I through IX are printed as enacted into Public Law 95-478 (October 18, 1978). Excerpts from the Food Stamp Act, the Social Security Act, the White House Conference on Aging Act, and others are included in part II. Part III provides a brief history of events preceding the Older Americans Act through the 1978 amendments, and describes emphases of programs from 1972-74.

304 Smith, Charlotte. "INFLUENCE OF STANDARDS ON THE NUTRITIONAL CARE OF THE ELDERLY." Journal of the American Dietetic Association, 73(2), Aug 1978: 115-119.

An historical perspective (1935-77) is given on the influence which State and Federal standards have had on the nutritional care of the aged in nursing homes in the United States. States have the opportunity to promulgate higher standards than those set by the Federal Government; California is given as an example.

305 TOWARD A NATIONAL POLICY ON AGING.

See Reference No. 45.

- 306 United States. House. Select Committee on Aging. FRONTIERS IN DIGESTIVE DISEASE RESEARCH. Washington, DC: Government Printing Office, 1982. 93 pp. (Committee Publication No. 97-349).
- 307 United States. House. Committee on Education and Labor. COMPILATION OF THE OLDER AMERICANS ACT OF 1965 AND RELATED PROVISIONS OF LAW AS AMENDED THROUGH DECEMBER 29, 1981. Washington, DC: Government Printing Office, May, 1982. 62 pp.
- 308 United States. Senate. Committee on Agriculture, Nutrition, and Forestry. NUTRITION NEEDS OF THE ELDERLY: HEARINGS BEFORE THE SUBCOMMITTEE ON NUTRITION. Washington, DC: Government Printing Office, 1981. 122 pp.
- 309 United States. Senate. Special Committee on Aging. HUNGER, NUTRITION, OLDER AMERICANS: THE IMPACT OF THE FISCAL YEAR 1983 BUDGET, FEBRUARY 25, 1982. Washington, DC: Government Printing Office, 1982. 71 pp.

## VII. Food & Nutrition Programs



105



## GOVERNMENT PROGRAMS

- 310 Bechill, William D. and Wolgamot, Irene. NUTRITION FOR THE ELDERLY. THE PROGRAM HIGHLIGHTS OF RESEARCH AND DEVELOPMENT NUTRITION PROJECTS FUNDED UNDER TITLE IV OF THE OLDER AMERICANS ACT OF 1965, JUNE 1968 TO JUNE 1971. DHEW Publication No. (SRS) 73-20236. 96 pp.

This summary of the major program data, experiences, and findings of the pilot nutrition programs is based on analysis and review of reports from 23 projects as well as site visits to the projects. A description of the title IV provisions and an overview of nutritional needs and problems of older persons are included. Implications for a national nutrition program complete the report.

- 311 Caliendo, Mary Alice. "DIETARY STATUS OF PARTICIPANTS IN THE NATIONAL NUTRITION PROGRAM FOR THE ELDERLY. PART I. POPULATION CHARACTERICS AND NUTRITIONAL INTAKES." Journal of Nutrition for the Elderly. 1(1), Spring 1980: 23-39.

A survey of 73 elderly participants in a nutrition program for the elderly was conducted to determine the influence of selected variables on the dietary quality of the sample, the frequency of participation in the meal program, and the contribution of the program to the diets of the sample. Research findings were used to suggest possible implications in program planning and implementation so that the program might increase the nutritional benefits to participants.

- 312 CASH INSTEAD OF FOOD STAMPS FOR ELDERLY AND DISABLED PEOPLE. FNS - United States Department of Agriculture, Food and Nutrition Service, (210), Apr. 1980: 7.

The Food Stamp Program is testing an alternative way of providing food stamp benefits to people age 65 or older and those receiving Supplemental Security Income (SSI) by providing a check in place of food stamps to eligible households. Information on specifying eligibility requirements, how to apply for a food stamp check, how house-ridden qualified people can apply, and the kind of information that is needed is provided. Qualifying single-person households must have resources (money, property, and vehicles) not exceeding \$1,750; resources of households of two or more people may not exceed \$3000 and at least one person is age 60 or above. The home, its contents, and surrounding property are not counted, but cash, savings and checking accounts, and income are.



- 313 FOOD STAMP SSI/ELDERLY CASHOUT DEMONSTRATION, EVALUATION, FINAL REPORT.  
USDA Food and Nutrition Service, 1982. III Volumes.

This report presents the findings of the Food Stamp SSI/Elderly Cashout Demonstration conducted by the USDA Food and Nutrition Service to examine ways to better satisfy the needs of the elderly in the Food Stamp Program (FSP). The report is presented in three volumes covering substantive findings, methodological appendices, and survey operations. The cashout program caseload at the eight demonstration sites included about 35,000 households: 35 percent had SSI recipients of age 65 or older; 30 percent were elderly households not receiving SSI; 35 percent were in the SSI blind and disabled category. The cashout demonstration had, at most, a very modest effect on participation in the FSP. SSI recipient households had much higher FSP participation rates than non-SSI households. At cashout sites, participants had higher nutrient intakes than nonparticipants for four of nine nutrients studied. The cashout produced a cost savings of about 36 percent of average issuance costs. Other factors and findings are discussed.

- 314 Harper, J.M.; Jansen, G.R.; Shigetomi, C.T.; and Frey, A.L. "MENU PLANNING IN THE NUTRITION PROGRAM FOR THE ELDERLY." Journal of the American Dietetic Association, 68(6), June 1976: 529-534.

A nutrient standard menu planning method was developed for use in planning and monitoring menus which provided one-third of the 1974 Recommended Dietary Allowances for persons 60 years of age or older for nine indicator nutrients and calories, while restricting fat to less than 40 percent of total calories. A manual was prepared giving nutrient composition for 1,100 recipe items in units which were one-tenth of the nutrient standard for the meal. Site managers of the Administration on Aging evaluated the planning/monitoring method and felt the approach to be workable and applicable.

- 315 Jensen, Catherine Tim. "FOOD STAMP CHANGES HELP THE RURAL POOR." Food and Nutrition, 10(1), Feb 1980: 2-5.

Eliminating the purchase requirement for food stamps and issuing them by mail increased participation in the program by the rural poor. Participation in the smallest, most rural areas increased 42 percent versus 8 percent in the largest, most urban areas. The Southwest increased participation by 31 percent and the Southeast and Mountain Plains by 32 percent; these regions consist of predominantly rural States. Within regions, the most rural states showed the largest increases (e.g., Alabama).

- 316 Kincaid, Jean W. "ACCEPTANCE OF ON-SITE PREPARED VERSUS CATERED MEALS IN TITLE VII PROGRAMS." Journal of Nutrition for the Elderly, 1(2), Summer 1981: 27-38.

Demographic and title VII participation data were collected by a questionnaire administered to 501 participants of catered and onsite meal programs funded by title VII of the Older Americans Act. Taste panel and microbiological evaluations were made of the meals, revealing onsite meals to be of superior quality, larger in quantity, and microbiologically safer than catered meals.

- 317 Klinger, Judith L. "MEALTIME MANUAL FOR PEOPLE WITH DISABILITIES AND THE AGING."

See Reference No. 389

- 318 Kohrs, Mary Bess; Nordstrom, James; Plowman, Esther Lorah; O'Hanlon, Pauline; Moore, Charlene; Davis, Carolann; Abrahams, Owen; and Eklund, Darrel. "ASSOCIATION OF PARTICIPATION IN A NUTRITIONAL PROGRAM FOR THE ELDERLY WITH NUTRITIONAL STATUS." American Journal of Clinical Nutrition, 33(12), Dec 1980: 2643-2656.

Participation in the Title VII Nutrition Program for the elderly improved the nutritional status of 547 older persons, especially in vitamins A and C. A significantly smaller percentage of regular intakes of program participants had inadequate dietary intakes of thiamin and riboflavin. Although frequency of participation was not related to serum iron or anemia, fewer persons had anemia or low serum iron than had been reported previously. Anthropometric, dietary, and biochemical assessment of subjects indicated that participation was not associated with energy, saturated fat or cholesterol intakes, nor with incidence of obesity.

- 319 Kohrs, Mary Bess. "EVALUATION OF NUTRITION PROGRAMS FOR THE ELDERLY." American Journal of Clinical Nutrition, 36(4), Oct 1982: 812-818.

An evaluation of nutrition benefits from Missouri's hot meals programs for the elderly is provided, in concert with other relevant studies. Dietary intake, biochemical measures (judged from blood analysis), anthropometric measurements, and nutrition education are addressed separately. It was concluded that meal program menus for the elderly should include 3 ounces of meat (since the elderly are vulnerable to protein malnutrition); iron-rich foods, fruits and vegetables rich in

vitamins A and C; and milk, cheese, and other calcium-rich foods in meal preparation. Foods rich in vitamin C aid iron absorption and prevent vitamin C deficiency. It was further concluded that the administration of nutrition intervention programs should emphasize nutrition training in personnel hiring at all levels; include nutrition education to aid the elderly not in the meals program; include elderly over age 75, those with low education, and women; and serve meals at least 5 times a week to assist the attainment of Recommended Daily Allowances.

- 320 Kohrs, Mary B. "THE NUTRITION PROGRAM FOR OLDER AMERICANS: EVALUATION AND RECOMMENDATIONS." Journal of the American Dietetic Association, 75(5), Nov 1979: 543-546.

Participants at five meal sites in central Missouri were surveyed to evaluate the influence on nutritional status of the Title VII Nutrition Program of the Older Americans Act of 1965, as amended. Findings resulted in recommendations that (a) dietitians administer the program; (b) meals be served at least 5 days a week; (c) meals provide more than one-third of the RDA; (d) outreach efforts be included for persons over 75, the socioeconomically disadvantaged, and women; (e) nutrition education be provided on a consistent basis.

- 321 Kohrs, Mary B.; O'Hanlon, Pauline; and Eklund, Darrel. "TITLE VII-NUTRITION PROGRAM FOR THE ELDERLY. I. CONTRIBUTION TO ONE DAY'S DIETARY INTAKE." Journal of the American Dietetic Association, 72(5), May 1978: 487-492.

Food records kept by 466 participants of the program in Missouri showed higher overall nutrient intakes for those eating at the meal site. Nonparticipants consumed more iron than participants. Women and older subjects benefited most from the program meal. Findings support the importance of nutritionists in administrative roles.

- 322 Kohrs, M.B; O'Hanlon, P.; Krause, G.; and Nordstrom, J. "TITLE VII-NUTRITION PROGRAM FOR THE ELDERLY. II. RELATIONSHIP OF SOCIOECONOMIC FACTORS TO ONE DAY'S INTAKE." Journal of the American Dietetic Association, 75(5), Nov 1979: 537-542.

One-day food records from 466 participants of the program in Missouri were compared among those who ate at the meal site, those who did not, and nonparticipants. Factors which were found to be related to dietary intake included sex, education, and preretirement occupation. Socioeconomic factors were not significantly related to nutrient

intake for those eating at the meal site, supporting the program emphasis of service to the disadvantaged.

- 323 Longen, Kathryn and Stucker, Thomas. "USDA FOOD PROGRAMS." National Food Review, Winter 1980: 4-5.

Several methods are being tested and evaluated in a continuing effort to improve the Food Stamp Program. For elderly people, cash is provided instead of stamps. Application for assistance is being done through welfare offices in some sites to determine if the convenience will aid those most in need. The requirement that recipients purchase a portion of their stamps has been rescinded. Eligibility has been restricted by lowering the maximum allowable net income, reducing deductions, and eliminating automatic eligibility for SSI recipients. Though more than 500,000 were dropped from the program for these reasons, participants continue to increase. By the end of 1979, the number had reached 17.9 million.

- 324 LONGITUDINAL EVALUATION OF THE NATIONAL NUTRITION PROGRAM FOR THE ELDERLY: REPORT OF FIRST-WAVE FINDINGS. Administration on Aging, U.S. Department of Health, Education and Welfare, Washington, DC: Government Printing Office, 1980. 333 pp. DHEW Publication No. (OHDS) 80-20249.

The report presents an analysis of the first of five waves of data to be collected at yearly intervals. The data were obtained from 91 meal sites through interviews, project and site records, and observations. Included is a description of the program and local variations, an assessment of the impact of the program on participants, characteristics of the program, and other factors which influence the impact on participants. Differences are described among recent entrants, long-term participants, former participants, and nonparticipating neighbors.

- 325 Meyer, J.W. "EQUITABLE NUTRITION SERVICES FOR THE ELDERLY IN CONNECTICUT." Geographical Review, 71(3), July 1981: 311-323.

The social and geographical equity of the federally funded nutrition program in Connecticut is examined and the success of the targeting efforts of the State toward socially disadvantaged and rural elderly is evaluated. This evaluation revealed that participation rates of 4 subgroups examined (poor, frail, and minority elderly, and elderly living alone) differed significantly at the State level from each other and from the general participation rate. This finding suggests

that focusing on specific needy groups has been successful. Participation rates for elderly who were poor, frail, or living alone and the general rate were highly correlated from town to town. Discriminant analysis techniques revealed that the presence of nutrition sites, the size of the elderly population, and the efforts of several nutrition projects were related to deviation from the statewide participation rates. The results of this study suggest that these projects could serve as models for targeting efforts in various sectors of the State and the United States.

326 "NUTRITION EDUCATION FOR THE ELDERLY."

See Reference No. 370.

327 NUTRITION SERVICES FOR THE ELDERLY. AOA-HHS Fact Sheet. Revised 1980.  
3 pp. DHH Publication No. (OHDS) 80-20230.

A brief explanation is given of the nutrition program authorized by Title VII of the Older Americans Act of 1965, as amended. Scope and administration of the program, and eligibility for nutrition services are included.

328 Pelcovits, Jeanette. "NUTRITION FOR OLDER AMERICANS." Journal of American Dietetic Association, 58(1), Jan 1971: 17-21.

A report of preliminary findings of research and demonstration programs, initiated by the Administration on Aging under Title IV of the Older Americans Act of 1965, discusses five elements which were built into these projects: (1) reaching into the community to locate those in need; (2) serving meals in a social setting; (3) including nutrition education; (4) providing other services, such as transportation and recreation; (5) performing evaluations. The findings support conclusions of the 1970 report of the President's Task Force on Aging.

329 Pelcovits, Jeanette, "NUTRITION TO MEET THE HUMAN NEEDS OF OLDER AMERICANS." Journal of the American Dietetic Association, 60(4), Apr 1972: 297-300.

An overview of findings from nutrition demonstration projects funded by the Administration on Aging is presented. Group meals are found to be an effective vehicle in dealing with nutrition problems of noninstitutionalized older Americans.

- 330 Posner, Barbara Millen. NUTRITION AND THE ELDERLY.

See Reference No. 27.

- 331 Public Health Service, Bureau of Community Health Services, DHEW. FEDERAL AND NON-FEDERAL RESOURCES FOR NUTRITIONAL INFORMATION AND SERVICES - A SELECTED LIST.

A list of state administrators for State offices on aging and the National Nutrition Program for Older Americans is provided. Fact sheets describe nutrition-related programs including eligibility rules. A list of references on nutrition and sources for publications also are included.

- 332 Riggs, Sylvia. "HOW TO SERVE SPECIAL-DIET CUSTOMERS." Institutions, 86(9), May 1, 1980: 90,92,94.

Many households in America include someone who needs a special diet. The food service industry is finding many innovative ways of catering to these special groups. Athletes, for example, are concerned about good nutrition, so Arby's has designed a series of brochures in conjunction with local schools as part of a fitness program. Vegetarians don't just eat cheese and noodles--many new dishes such as kale souffle and cashew chili reflect growing demand. Restaurants are offering selections for people with heart problems based on a program called "Creative Cuisine", designed by the American Heart Association. Restaurants can cater to the problems of the elderly through convenience and greater nutrient density in small portions.

- 333 Schneider, Robert L. "BARRIERS TO EFFECTIVE OUTREACH IN TITLE VII NUTRITION PROGRAMS." Gerontologist, 19(2), Apr 1979: 163-168.

There is little evidence that outreach activities, required from each nutrition program, have obtained participation of the hard-to-reach target group of the elderly most in need of nutrition services. A study of one program in Virginia identified three types of barriers: (1) personal, such as fear of physical or spiritual harm expressed by the elderly; (2) environmental, such as racial and religious prejudice, pride, and extreme isolation of the elderly; (3) programmatic, such as imprecise eligibility guidelines, site location, ineffective publicity, inadequate transportation, laws protecting privacy and confidentiality, limited staff for followup, and



incompetent coordinators. Recommendations to overcome these barriers and suggestions for future investigation are given.

- 334 Unklesbay, Nan and Unklesbay, Kenneth. "AN AUTOMATED SYSTEM FOR PLANNING MENUS FOR THE ELDERLY IN TITLE VII NUTRITION PROGRAMS." Food Technology, 32(8), Aug 1978: 80-83.

A computer was used heuristically to develop menus for title VII nutrition programs in Missouri, incorporating quantity recipes desired by the elderly at each site, current food cost data, seasonal availability information, and food preference data of the participants at each site. Menus were appraised for nutrient content and total cost before being accepted.

- 335 Weg, Ruth R. "PROLONGED MILD NUTRITIONAL DEFICIENCIES: SIGNIFICANCE FOR HEALTH MAINTENANCE."

See Reference No. 250

#### COMMUNITY PROGRAMS

- 336 Andreiev, Priscilla. "MISSISSIPPI SENIORS LINE UP FOR MORRISON'S FOOD." Institutions, 86(3), Feb 1, 1980: 35-37.

The contract feeding division of one of the South's largest cafeteria style restaurants (Morrison's) was awarded the contract to feed Mississippi's elderly needy. The major problem encountered was how to deliver hot and cold food at the right time 2 hours away. Menu planning focused on soft-textured foods such as chicken, liver, and fish, which are geared to elderly people's tastes. The menus are on a 3-month cycle which allows for less repetition and easier State approval. The program has met with great success, witnessed by the increased participation by the elderly. Nutrition education programs are planned to be presented to program participants. Holiday meals are given a day or two before the holiday, and cold food packages are handed out for the days the facilities are closed.

- 337 Bunck, Theodore J. and Iwata, Brian A. "INCREASING SENIOR CITIZEN PARTICIPATION IN A COMMUNITY-BASED NUTRITIOUS MEAL PROGRAM." Journal of Applied Behavior Analysis, 11(1), Spring 1978: 75-86.

Two studies reveal that the most effective methods of increasing participation in community-based meal programs are personal home visits made by social workers or volunteers and incentive programs (giveaways, services, etc.). The most cost-effective method, however, is the mailed incentive menu. Public service radio announcements, followup telephone calls, and scheduling of activities are not as effective for recruitment of new participants.

- 338 Cairns, Stella C. and Caggiula, Arlene W. "EVALUATION OF THE ATTITUDES OF RECIPIENTS OF HOME-DELIVERED MEALS." Journal of the American Dietetic Association, 65(5), Nov 1974: 560-562.

The Thurstone method is shown to be a useful tool in evaluating 174 recipients' attitudes toward a "Meals on Wheels" program in the Pittsburgh area. Although scores are generally favorable, some problem areas detected include need for maintaining the proper temperature of the food, providing some socialization with the meal service, increasing or decreasing portion sizes, and evaluating food flavor for correct seasoning.

- 339 Holmes, Douglas. "NUTRITION AND HEALTH-SCREENING SERVICES FOR THE ELDERLY." Journal of the American Dietetic Association, 60(4), Apr 1972: 301-305.

A nutrition demonstration project in New York City, funded by the Administration on Aging, is described. Evaluation shows improved eating habits, greater nutrition knowledge, richer interpersonal relations and higher morale. The problems encountered might be expected in similar programs across the country.

- 340 Leong, Yvonne. "NUTRITION EDUCATION FOR THE AGED AND CHRONICALLY ILL."

See References No. 367.

- 341 McAllister, Wilmer. "IMPLEMENTING A PORTABLE MEALS PROGRAM." Journal of the American Dietetic Association, 66(4), Apr 1975: 373-377.

A "Meals on Wheels" program developed at University Hospital in Pensacola, Florida is described as to organization and planning, and methods for preparing and packaging meals. The significant role of volunteer assistance is detailed.

- 342 Manning, Arlene M. and Means, Jeanne G. "A SELF-FEEDING PROGRAM FOR GERIATRIC PATIENTS IN A SKILLED NURSING FACILITY." Journal of the American Dietetic Association, 66(3), Mar 1975: 275-276.

Rehabilitation of geriatric patients is fostered by restoring independence through teaching patients to feed themselves again. Included are the procedure for initiating the program, purposes and advantages of self-feeding, and tips on feeding the geriatric patient.

- 343 MORE THAN BREAD ALONE. Rochester, NY: Media Learning Corporation. 1975. 16 mm motion picture, color, sound, 22 minutes.

Several aspects of a local nutrition program and how it affects the elderly are reviewed through the experiences of one woman who is able to discover new friendships and interests as a participant in such a program.

Can be obtained from Media Learning Corporation, P.O. Box 8846, 1439 Buffalo Road, Rochester, NY 14624.

- 344 Rankine, Daryl C. and Taylor, Betty. "ARE COMMUNITY NUTRITION PROGRAMS MEETING THE NEEDS OF THE ELDERLY?" Journal of Home Economics, 67(6), Nov 1975: 37-40.

The "Meals on Wheels" program and the Golden Diners Club in Kalamazoo, Michigan are described as to meal composition, cost, and schedule. Problems of the aged which make them vulnerable to malnutrition are cited. The results of a questionnaire survey indicate a high level of participant satisfaction, and support the hypothesis that meals served in a socialized setting improve interest in food.

- 345 Wong, Helen; Krondl, Magdalena; and Williams, J. Ivan. "LONG-TERM EFFECT OF A NUTRITION INTERVENTION PROGRAM FOR THE ELDERLY." Journal of Nutrition for the Elderly, 2(1), Fall 1982: 31-48.

A 3-year food behavior study of noninstitutionalized urban elderly (aged 65 to 77, of British descent, and living alone) included a nutrition intervention program designed to maintain and/or improve dietary practices. The effect of the program was evaluated by changes in knowledge, perceptions of 14 selected foods, and of frequency of use 194 foods. The design was one of the pre- and post-test comparisons between an experimental and control group. Although the findings admit the difficulty in changing dietary practices of

seniors, they do provide evidence that some changes are feasible at the cognitive level and in the perception of foods. They document continuous changes in seniors' nutrition related behavior, which, though difficult to assess, requires the attention of nutritionists.

#### FOOD SERVICES

- 346 CONGREGATE MEALS: PART 2, PROVIDING THE DINING ROOM SERVICE. Durham, NH: New England Gerontology Center, 1973. Videocassette, black and white, sound, 30 minutes.

Advantages and disadvantages of cafeteria, table service, and family-style service of meals in central neighborhood dining areas are presented. Both the number of dependable volunteers and the size of the available dining area, as well as the nutritional, physical, and psychological needs of the customers, will help determine the type of service used. Whatever the choice, tasty nutritious food, a cheerful clean dining area, and efforts to adapt meals to individual food preferences and special dietary needs are necessary considerations.

- 347 A FOOD SERVICE GUIDE TO MASSACHUSETTS' NUTRITION PROGRAM FOR THE ELDERLY." Durham, NH: New England Gerontology Center. 43 pp.

This manual is designed to assist site managers in training workers and implementing the program. Included are directions for food preparation, cycle menus, suggestions for using recipes and portion control, and sanitation and safety procedures.

- 348 NUTRITION PROGRAMS FOR THE ELDERLY: A GUIDE TO MENU PLANNING, BUYING, AND THE CARE OF FOOD FOR COMMUNITY PROGRAMS." Agricultural Research Service. Washington, DC: Government Printing Office, 1975. 44 pp. Stock No. 001-000-00162-2.

The Agricultural Research Service, USDA, prepared this publication to assist persons working in programs that provide group meals or home-delivered meals for the elderly. Suggestions for meal planning with sample menus include menu planning, buying and storing foods, conserving the nutrients in food, keeping foods safe to eat, packaging meals for home delivery, and figuring the cost of foods. References for further information are given.

- 349 Pelcovits, Jeanette and Wolgamot, Irene H. "NUTRITION PROGRAMS FOR THE ELDERLY: SELECTING A MEAL DELIVERY SYSTEM." Journal of Home Economics, 66(1), Jan 1974: 43-45.

Congregate meals are implemented under the National Nutrition Program for the Elderly enacted in March 1972. Options to consider in selecting a meal-delivery system included whether the food will be prepared by program staff or an outside source, or by using a combination of these approaches. The choice will depend on the community's resources. The system should provide sanitary food that satisfies both preferences and nutrient requirements of the elderly. Food management professionals should be responsible for the meals and the participants should be involved in planning and operating the program.

- 350 Rhodes, Lodi. "NASA FOOD TECHNOLOGY." Gerontologist, 17(4), 1977: 333-340.

A demonstration project was conducted to test whether or not the food technology and experience developed in the NASA manned space program could serve as a basis for developing a nutritional sound and acceptable meal system for the elderly. The NASA meal system was tested in seven locations over a 3-month period involving 209 elderly volunteers. Factors discussed include test design; areas of inquiry (meal costs, user acceptability, and health and nutritional impact of the meals); characteristics of the sites and the participants; meal service conditions; assessment framework; participant reactions to the meal system; and policy implications. Participant reaction was overwhelmingly favorable (77 percent). Of these, 51 percent of the participants favored the food, 21 percent the preparation method, and 6 percent the delivery method. All elements of the NASA meal system are readily available, including the food technology.

- 351 Unklesbay, Nan. "STUDENTS IN FOOD SYSTEMS MANAGEMENT CONTRIBUTE TO NUTRITION PROGRAMS FOR THE ELDERLY." Journal of the American Dietetic Association, 70(5), May 1977: 516-520.

An exploratory training project was developed by senior dietetic students for personnel in title VII nutrition programs as part of the coordinated undergraduate program in food systems management at a Missouri university. Project objectives, student activities, and preliminary evaluations are described; and recommendations are made for future research studies.



## VIII. Nutrition Information





- 352 Clancy, Katherine L. "PRELIMINARY OBSERVATIONS ON MEDIA USE AND FOOD HABITS OF THE ELDERLY." Gerontologist, 15, 1975: 529-532.

Media exposure (particularly television, TV) and degree of social involvement were studied for their effect on product buying and food consumption patterns for the elderly. The study involved 47 elderly subjects (41 females) having a mean age of 72 and living in their own homes. Nutritional information was obtained by 24-hour recall and subject-reported meal patterns. Nutrient intakes were calculated and a dietary score constructed. The relative calorie intake from snack foods correlated positively with hours of TV watched daily. Evening TV watching correlated positively with the intake of fats and total calories in the diet. Findings suggest that food habits of the elderly are related to TV viewing and social participation.

- 353 Gillis, D. "SPOTLIGHT ON AGING. PART 3. SENIORS: A TARGET FOR NUTRITION EDUCATION." Canadian Nurse, 76(7), July-Aug 1980: 28-29.

The interrelationship of nutritional health with economic status, chronic diseases, aging process, social isolation, and lack of information makes senior citizens a necessary target for nutrition education. Small group discussion, facilitated by a health professional, is an effective method for allowing seniors to exchange practical information and solutions to problems. Additional suggestions are offered to make nutrition education for the elderly relevant, practical, appealing, and reinforcing, while respecting needs and existing food practices.

- 354 Natow, Annette and Heslin, Jo-Ann. "NUTRITION EDUCATION IN LATER YEARS." In Geriatric Nutrition. Boston, MA: CBI Publishing Co., 1980: 225-244.

Numerous factors (e.g., lifelong food preferences and beliefs) must be considered when planning a nutrition education (NE) program for the heterogeneous population group comprised by the elderly. These include physical changes (seeing, hearing, intelligence, and memory status); the proper use of NE as part of the regular routine of group meals program; and the use of proper instructional materials and television for effective NE. Aspects of these are described and discussed. The principal objective of NE of the elderly is to influence them to make better decisions regarding their food selections and meal patterns. Almost any method that achieves this should be considered a valid NE approach. A brief discussion of some model approaches to NE for the elderly is given.

- 355 Smiciklas-Wright, Helen. "NUTRITION EDUCATION AND THE ELDERLY." Journal of Nutrition for the Elderly, 1(2), Summer 1981: 3-15.

Nutrition education for the elderly sometimes has encountered obstacles, because of resistance to change and apathy among the elderly. These obstacles have not been sufficiently challenged by programs in nutrition education. A need exists to dispel misconceptions by professionals with respect to nutrition education for the elderly. Creativity in leadership is also needed. Focal points discussed include long-standing eating habits and degree of changes that may be expected.

#### PROGRAMS AND STUDIES

- 356 Bazzarre, Terry L. "AGING AND NUTRITION EDUCATION." Educational Gerontology, 3(2), Apr/June 1978: 149-163.

Objectives of nutrition education for the elderly include providing information to those at greatest risk and offering the possibility of optimum life span and well-being through diet and good health habits. Nutrition educators need to be aware of the effects of aging on nutrient requirements; individual psychological, sociological, and cultural factors affecting eating behavior, nutritional problems; and economic resources of the elderly. The author suggests increased use of behavior modification techniques, positive attitudes toward the elderly, and evaluation of the mental health status of the individuals. Physiological changes of aging affecting nutrient utilization and the history of feeding and nutrition education programs are reviewed.

- 357 Brun, Judy K. and Clancy, Katherine L. "LOW-INCOME AND ELDERLY POPULATIONS." Journal of Nutrition Education, 12(2 Suppl), 1980: 128-130.

Rationale and recommendations for nine issues concerning nutrition education needs of low-income and elderly people are presented. The issues state the needs for (1) adequate income and access to food and nutrition education for all Americans, (2) a national nutrition education policy, (3) programs targeted to nutritionally vulnerable persons, (4) a holistic, multidisciplinary focus, (5) target groups to be involved in program development, (6) nutrition education as a reimbursable health care component, (7) strengthened programs for nutrition educators, (8) use of mass media, and (9) thorough evaluation of nutrition education programs.

- 358 Caliendo, Mary Alice. "DIETARY STATUS OF PARTICIPANTS IN THE NATIONAL NUTRITION PROGRAM FOR THE ELDERLY. PART I. POPULATION CHARACTERISTICS AND NUTRITIONAL INTAKES."

See Reference No. 311.

- 359 Caliendo, Mary Alice and Batcher, Mary. "FACTORS INFLUENCING THE DIETARY STATUS OF PARTICIPANTS IN THE NUTRITIONAL PROGRAM FOR THE ELDERLY. PART II. RELATIONSHIPS BETWEEN DEITARY QUALITY, PROGRAM PARTICIPATION, AND SELECTED VARIABLES." Journal of Nutrition for the Elderly, 1 (1), Spring, 1980: 41-53.

A study of a nutrition program for the elderly was designed to (1) describe the influence of selected demographic, environmental, and personal variables on food and nutrient intake and on participation frequency; (2) determine the title III meal program contribution to dietary status of the participants relative to demographic and personal variables; and (3) to offer means with which these findings might be integrated into program design to enhance nutritional benefits. While a positive association was found between socialization indicators and dietary quality, the relationship was not significant. Participants who believed their meals were highly nutritious generally consumed a more nutritious diet, but no significant association was found between dietary quality and how healthy a person believed himself to be. Participants taking vitamins generally had better diets. However, neither frequency of participation in the meal program nor nutrition knowledge significantly predicted dietary quality. The most important predictor of frequency of program participation was food shopping quality. Other factors studied and correlations developed are discussed.

- 360 Caliendo, Mary Alice and Smith, Janet. "FACTORS INFLUENCING THE NUTRITION KNOWLEDGE AND DIETARY INTAKE OF PARTICIPANTS IN THE TITLE III-C MEAL PROGRAM." Journal of Nutrition for the Elderly, 1(3,4), Fall/Winter 1981: 65-77.

Relationships between demographic, knowledge and attitude factors, and dietary status were investigated in the Title III-C Meal Program in Prince Georges County of Maryland. Analysis consisted of Pearson's product moment correlations, and multiple regression. Variables statistically significant in predicting the nutrition knowledge score were level of education, self-rating of diet, self-rating of health, and age. Multiple regression was used to determine which dependent variables most significantly predicted the variance in independent

variables of calories and of nutrients. Results of the research are used to make suggestions for program planning and evaluation.

- 361 Carlin, J.M. "NUTRITION EDUCATION FOR THE OLDER AMERICAN." Durham, NH: New England Gerontology Center, 1975. 46 pp.

An explanation is given of the legislative mandate for the 1972 Title VII, Nutrition Program for the Elderly, under the Older Americans Act. Considerations for developing the nutrition education component of these programs are followed by an organizational chart at the State level. Suggestions are given for the right program environment, discussion topics, preparation of slide programs, food shopping advice, a vegetable garden project, a food co-op approach, and production of a cookbook - all actively involving the elderly in planning, directing and demonstrating. Information, references, and an annotated bibliography are included.

- 362 Fee, Caroline and Tseng, Rose Y.L. "'MINI' NUTRITION EDUCATION FOR SENIOR CITIZENS." Journal of Nutrition Education, 14(3), Sept 1982: 87.

Seven minidemonstrations for the elderly were designed to relate to their nutritional needs. Each unit presents one concept in a graphic and dramatic manner, stressing the practical approach. A discussion period concludes each unit, allowing for clarification of information. Humor is used in all units; one of the most popular is "Eat it today, wear it tomorrow." In this unit, the leader defines overweight, discusses its undesirable effects, and suggests simple and economical ways to reduce calories.

- 363 Holdsworth, M. Diane and Davies, Louise. "NUTRITION EDUCATION FOR THE ELDERLY." Human Nutrition: Applied Nutrition, 36A(1), Feb 1982: 22-27.

Education activities among the elderly (especially those over 70) are outlined; a longitudinal project investigating the need and effectiveness of nutrition education in preretirement is summarized. Nutrition education through the use of cartoon slide lectures coupled with leaflets was found to be effective among the elderly. The approach highlights specific nutritional problems and suitable solutions, and varies the message according to the target audience; six examples are given (e.g., for district dietitians, an assessment kit of 26 risk factors is provided).

- 364 Kim, Sooja; Schriver, Jane E.; and Campbell, Kathleen M. "NUTRITION EDUCATION FOR NURSING HOME RESIDENTS." Journal of the American Dietetic Association, 78(4), Apr 1981: 362-366.

A nutrition education program was instituted in a nursing home and its effectiveness evaluated by measures of daily dietary intake. The program consisted of four weekly sessions; the evaluation covered 2 weeks prior to, 4 weeks during, and 2 weeks after the nutrition sessions. Results were compared to an 8 week concurrent dietary study in another nursing home without the educational sessions. While improvements were seen during treatment for the nutrient intakes measured, effects were not sustained after the program, and may have been due to the increased attention rather than the nutrition education.

- 365 Knauer, Virginia. "PORTABLE MEALS CONTRIBUTE TO NUTRITION EDUCATION EFFORTS." Journal of Nutrition Education, 3(2), Fall 1971: 59-61.

Concern for the homebound and elderly has led to the development of meals delivered to homes in 22 Ohio cities. In Cincinnati, nutrition education has been added to six programs in a variety of ways, and these are described.

- 366 Lasswell, Anita B. and Curry, Katherine R. "CURRICULUM DEVELOPMENT FOR INSTRUCTING THE ELDERLY IN NUTRITION." Journal of Nutrition Education, 11(1), Jan/Mar 1979: 14.

A pilot nutrition education program was conducted with 25 participants, 60 to 85 years old, who were being trained to help the homebound elderly. Results indicate that peer education for the elderly is successful and can be used to extend nutrition education to persons who otherwise could not benefit from it.

- 367 Leong, Yvonne. "NUTRITION EDUCATION FOR THE AGED AND CHRONICALLY ILL." Journal of Nutrition Education, 1(3), Winter 1970: 18-20.

Emergence and operation of the San Francisco Home Health Service program to improve nutrition of the aged and chronically ill are described. Homemaker-home health aides are trained to teach nutrition while performing other services. A case history illustrates cooperation among the health team members to improve physical well-being of a client. To strengthen the program, more nutrition personnel, better training of aides, and more education materials are needed.

- 368 Light, Luise. "CAMERAS HELP THE ELDERLY TO IMPROVE FOOD PATTERNS."  
Journal of Nutrition Education, 8(2), Apr/June 1976: 80-82.

A 4-month consumer and nutrition education program for the New York City Congregate Meals Project for the Elderly successfully used photography to stimulate interest and learning in participants. Groups of African, Spanish, Italian and Jewish descent each selected a different nutrition theme and learning activities. The author recommends that nutrition education with the elderly emphasize learner-mediated activities and program-generated visual material.

- 369 Natow, Annette and Heslin, Jo-Ann. "NUTRITION IN THE LATER YEARS."  
Journal of Nutrition for the Elderly, 1 (3,4), Fall/Winter, 1981:  
101-121.

Nutrition education programs for the elderly should respect lifelong food habits and cater to individual needs and limitations. Physiological changes associated with aging (impaired vision, hearing, psychomotor skills, and memory) can affect learning. An appropriate learning environment for nutrition education is described and topics of interest to elderly populations are listed. Audiovisual media can be useful in education; a sample slide show script is presented. Nutrition education programs appropriate for the aged include food cooperatives and vegetable garden projects.

- 370 NUTRITION EDUCATION FOR THE ELDERLY. 2nd ed. Richmond VA: Virginia Council on Health and Medical Care, 1978. 110 pp.

This handbook for organizations providing nutrition services to the elderly covers basic nutrition, shopping for food, food information and misinformation, diet and disease, and cooking and eating. The appendix includes techniques for teaching older adults and a summary of The Nutrition Program for the Elderly, Title VII, Older Americans Act.

- 371 Parham, Ellen S. "NUTRITION EDUCATION FOR THE ELDERLY."

See References No. 25.

- 372 Pelcovits, Jeanette. "NUTRITION EDUCATION IN GROUP MEALS PROGRAMS FOR THE AGED." Journal of Nutrition Education, 5(2), Apr/June 1973:  
113-120.



Older people may have poor eating habits for a variety of physiologic, economic, and emotional reasons, which must be recognized in planning nutrition education programs for them. Successful approaches which address to the genuine concerns of older people and include active planning and doing, rather than passive listening, are described.

- 373 Rae, J. and Burke, A.L. "COUNSELING THE ELDERLY ON NUTRITION IN A COMMUNITY HEALTH CARE SYSTEM." Journal of the American Geriatrics Society, 26(3), Mar 1978: 130-135.

A study of community nutrition services in Nova Scotia evaluated counseling of 234 noninstitutionalized elderly Canadians. Many of the problems pertained to excessive weight and longstanding inappropriate food habits. Results showed increased awareness of nutrition and improved knowledge of nutrition and food selection. It was noted that economic and physical problems often limited adherence to recommendations.

- 374 Shannon, Barbara and Smicklas-Wright, Helen. "NUTRITION EDUCATION IN RELATION TO THE NEEDS OF THE ELDERLY." Journal of Nutrition Education, 11(2), Apr/June 1979: 85-89.

Elderly Americans may have poor diets as a result of interrelated cultural, physiologic, and economic factors as well as lack of nutrition knowledge. Nutrition education programs should be developed on the basis of knowledge of how behavior change occurs, and should include evaluation research to measure effectiveness.

- 375 Sorenson, A.W. and Ford, M.L. "DIET AND HEALTH FOR SENIOR CITIZENS: WORKSHOPS BY THE HEALTH TEAM."

See Reference No. 39.

- 376 Templeton, Carolyn L. "NUTRITION COUNSELING NEEDS IN A GERIATRIC POPULATION." Geriatrics, 33(4), Apr 1978: 59-66.

A survey of 680 clients participating in the pilot Geriatrics Arthritis Program in Michigan indicates a desire as well as a need for nutrition counseling. Unsatisfactory intake of calcium and vitamin A is noted; 65 percent are obese and 25 percent are on special diets. Information is desired about balanced diets, food dollar bargains, food preparation and food stamps.

## MISINFORMATION

- 377 Metress, Seamus P. "FOOD FADS AND THE ELDERLY." Journal of Nursing Care, 13(10), Oct 1980: 12-13, 24.

A sociologist suggests that the benefits of food faddism are at least equal to the risks, and that the advantages and disadvantages of an individual's fad practices should be evaluated in a sociocultural context. While agreeing that self treatment may delay necessary medical intervention and/or incur undue expense, claims that faddism may result in toxicity, complications of existing conditions, unbalanced diets, and the disappointment of false hopes may be overemphasized. Sociopsychological benefits of actively participating in one's own care may motivate interest in life and produce beneficial biomedical effects.

## MEDIA

- 378 ABOUT AGING: A CATALOG OF FILMS. Los Angeles, CA: University of Southern California Press, 1977.

See Reference No. 1.

- 379 AGING AND NUTRITION. SNE Resource Center, Berkely CA: Society for Nutrition Education, 1980. 16 pp.

A qualified nutritionist has evaluated each item in this annotated compilation of printed and audiovisual education materials to be used in working with the aged. Source, cost, and availability of materials are included.

- 380 Fitzgibbons, Judy J.; Garcia, Pilar A.; and Connolly, Charles P. "NUTRITION EDUCATION FOR THE ELDERLY: USING TELEVISION PSAS." Journal of Home Economics, 71(3), Fall 1979: 43-44.

Suggestions for developing effective television public service announcements for the elderly include (1) evaluating the audience for specific needs; (2) making professional quality PSA's with audio and visual characteristics in which the action and the message are simple; (3) pretesting the PSA's; (4) checking stations as to the kind of spot and length preferred; and (5) evaluating effectiveness.

- 381 Fitzgibbons, Judy J. and Garcia, Pilar A. "TV, PSAS, NUTRITION AND THE ELDERLY." Journal of Nutrition Education, 9(3), July/Sept 1977: 114-118.

Four television public service announcements on nutrition for the elderly were broadcast by four stations in various time slots a total of 112 times in 6 weeks. Interviews of 65 persons over 60 years old, before and after the broadcasts, showed low recall and no change in nutrition knowledge or food selection. Effectiveness may have been limited by accessibility and receptivity of the audience to the PSA's.

- 382 Wolczuk, Patricia. "THE SENIOR CHEF." Journal of Nutrition Education, 5(2), Apr/June 1973: 142-144.

A Canadian television cooking series, designed to interest senior citizens and starring a "senior chef," was used to provide nutrition information as well as information on food buying and preparation. A free booklet was offered at the end of each show. Evaluation indicated the series was well accepted.

#### PRINT MATERIALS

- 383 COOKING FOR ONE IN THE SENIOR YEARS. Moscow, ID: University of Idaho Cooperative Extension Service, 1979. Bulletin No. 591. 8 pp.

Nutritional needs of the aging are presented in a style designed for easy reading with special discussions of common questions regarding food expense, food storage problems, and chewing difficulties.

- 384 Echelberger, Iris; Erickson, Martha; and Garber, Carolyn. MANY HEALTHY RETURNS. 1979. 20 pp.

A nutrition education kit outlines six sessions for use with older adults to help them appreciate the influences on their food choices, learn basic nutrition facts, be able to use the four food groups to select adequate normal and therapeutic diets, and evaluate information disseminated through the media. A bibliography of additional resources and suggestions for organizing, implementing and evaluating the program complete this packet. It is available from Martha A. Erickson, 3012 Robinhood, South Bend, IN 46614.

- 385 Gross, Florence. YOUR RETIREMENT FOOD GUIDE. Long Beach, CA: American Association of Retired Persons and National Retired Teachers Association, 1970. 30 pp.

The benefits and importance of an adequate diet are encouraged through short explanations of the Recommended Daily Dietary Allowances, the basic four food groups, and the six major classes of nutrients and their functions. Dietary supplements are not recommended unless specifically prescribed, and warnings of food faddism are discussed. Cholesterol, saturated and polyunsaturated fats, and their sources are described. Practical ideas for purchase and storage of foods, menu planning, and recipes complete this booklet for the consumer.

- 386 A GUIDE FOR FOOD AND NUTRITION IN LATER YEARS. Berkely, CA: Society for Nutrition Education, 1980. 16 pp.

Information is presented to guide those with special nutritional problems (chewing, constipation, gas, lactose intolerance, low-sodium diets, cholesterol and saturated fats, and medication and food) in maintaining their nutritional status while coping with their particular problem. Weight control and exercise, shopping trips, supplements, and health foods are discussed; and ways to cope with eating alone are provided. Further resources (books, organizations, etc) are suggested.

- 387 Journal of Nutrition for the Elderly.

This periodical is devoted entirely to nutritional services, research, programs, and care for the elderly. It has been developed for health and social professionals, administrators, and researchers involved in gerontological nutrition. Publication is monthly. Subscriptions are available from the Haworth Press, 75 Griswold Street, Binghamton, NY 13904.

- 388 Klinger, Judith L. MEALTIME MANUAL FOR PEOPLE WITH DISABILITIES AND THE AGING. Camden, NJ: Campbell Soup Company, 1978: 269 pp.

This guidebook contains recommendations on kitchen setups for specific types of physical problems; photographic illustrations of techniques, procedures and tools; information on nutrition and meal planning plus recipes; a list of sources for information, equipment, prices, manufacturers' addresses; and information on community-based programs for older people.

- 389 Mennes, Mary and Rygasewicz, Kathy. FOOD FOR FOLKS OVER 55. COOKING WITH LESS EFFORT. Madison, WI: University of Wisconsin Cooperative Extension Programs, 1979. 4 pp. Serial No. 87790214.

Several specific tips on food preparation are presented and briefly discussed in this bulletin written for the aging. Alternatives to use of standard cooking equipment; use of convenience foods; safety factors; and energy saving suggestions for the use of chairs, carts, and other equipment are given.

- 390 O'Hayan, Claude; Altosaar, Illimar, et al. "COMPUTER GAMES FOR TEACHING NUTRITION."

See Reference No. 397.

- 391 Walker, Mabel A. and Hill, Mary M. FOOD GUIDE FOR OLDER FOLKS. Home and Garden Bulletin No. 17, Washington, D.C.: U.S. Department of Agriculture, February 1973.

A daily food guide with the recommended number of servings and portion sizes is followed by menus applying this information. Tips on purchasing, time and energy savings, and recipes to use with just a hot plate and toaster oven complete this bulletin.

#### AUDIOVISUALS

- 392 BE WELL: HEALTH IN THE LATER YEARS. Los Angeles, CA: Churchill Films, 1983. 16mm motion picture, color, sound, 24 min.

Comedy vignettes convey general information on the main health concerns for people over 60. Aging is shown as a natural process with unique challenges and rewards. The following topics are covered: aging myths; loss of health and vigor; monitoring complaints; preventive health care (nutrition, exercise, and stress reduction); visits to the doctor; medications; smoking and alcohol use; and ways to change unhealthy habits.

- 393 BE WELL: NUTRITION IN THE LATER YEARS. Los Angeles, CA: Churchill Films, 1983. 16mm motion picture, color, sound, 24 min.

Comedy vignettes convey information on nutrition and food, especially the nutrition needs of the older (60 plus) population. Topics include the four food groups; shopping for nutritious, low-cost foods;

reducing sugar, fats, and salt; changing eating habits to control weight; preparing tasty meals; and dealing with eating alone and loss of appetite.

- 394 FOOD FOR OLDER FOLKS.

See Reference No. 10.

- 395 HELP YOURSELF TO BETTER HEALTH.

See Reference No. 13.

- 396 Keown, Gail M. and Klippstein, Ruth N. POSITIVE LIVING IN THE SENIOR YEARS.

See Reference No. 15.

- 397 O'Havan, Claude; Altosaar, Illimar; Nantel, Guy; and Armstrong, Jean. "COMPUTER GAMES FOR TEACHING NUTRITION." Journal of Nutrition Education. 12(4), Oct/Dec 1980: 190.

Three computer programs use participatory games to enhance interest in nutrition topics. The object of the program directed toward senior citizens is for them to select four foods for a meal. To earn the maximum number of points, each food chosen must be a member of a food group; economical; relatively low in calories; and a good source of vitamin A, vitamin C, calcium, or iron.

- 398 Pelcovits, Jeannette. NUTRITION EDUCATION FOR OLDER AMERICANS. Chicago, IL: American Dietetic Association, 1977, Audiocassette series (ACS) 2-77, with study guide.

The author addresses the question, "Are we assisting the older American?"

- 399 THE SPICE OF LIFE.

See Reference No. 50.



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## IX. Sources of Information



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## AGENCIES

A DIRECTORY OF STATE AND AREA AGENCIES ON AGING. US Congressional Select Committee on Aging. Washington, DC, U.S. Government Printing Office, 1982. 140 pp. (Committee Publication #97-362).

FEDERAL AND NON-FEDERAL RESOURCES FOR NUTRITIONAL INFORMATION AND SERVICES - A SELECTED LIST.

See Reference No. 331

## ORGANIZATIONS

Organizations from which information on nutrition and aging may be obtained include the following:

Gerontology Research Council, National Institute on Aging, 4940 Eastern Avenue, Baltimore, MD 21224. Telephone: (301) 396-9421

Information Office, National Institute on Aging, National Institutes of Health, Bethesda, MD 20205. Telephone: (301) 496-1752.

National Clearinghouse on Aging, Administration on Aging, 330 Independence Ave., SW, Washington, DC. 20201. Telephone: (202) 245-0188.

National Council on Aging, Suite 504, 1828 L Street, NW, Washington, DC. 20036.

For the names and addresses of other organizations, call or write to National Referral Center, Science and Technology Division, Library of Congress, 10 First Street, SE, Washington, DC. 20540. Telephone: (202) 287-5670.

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